INDIA RUBBER WORLD
FOUNDED 1889
CAOUTCHOUC
GUTTA-PERCHA
Reg. U.S. Pat. Off.
Reg. United Kingdom.

Published on the 1st of each month by

THE INDIA RUBBER PUBLISHING CO.
No. 25 West 45th Street, New York

Telephone—Bryant 2576

CABLE ADDRESS: IRWORLD, NEW YORK

Member of the National Publishers' Association

HENRY C. PEARSON, F.R.G.S., Editor

Vol. 69 January 1, 1924 No. 4

SUBSCRIPTION: $3.00 per year, $1.75 for six months, postpaid, for the United States and dependencies and Mexico. To the Dominion of Canada and all other countries, $3.50 (or equivalent funds) per year, postpaid.

ADVERTISING: Rates will be made on application.

REMITTANCES: Should always be made by bank draft, Post Office or Express Money Order on New York, payable to THE INDIA RUBBER PUBLISHING COMPANY. Remittances for foreign subscriptions should be sent by International Postal Order, payable as above.

Rubber Achievements of the Past Year

IT IS customary on the threshold of a new year to glance backward to see in proper perspective the accomplishments in the year just passed and estimate what may be reasonably hoped for in the year just dawning. Primarily it can be fairly said that the great basic industry of manufacturing rubber goods is justified in feeling proud of its achievements during the last twelve months. The volume of its business expanded to nearly a billion and a half dollars, financially it attained a soundness hitherto unequalled, and it took a long stride in the direction of steady, all-year production and the stabilization of raw material cost and supply.

Especially satisfactory was the progress made toward eliminating the vexatious wide swings in crude rubber prices, so that now the prediction can be confidently made that in 1924 manufacturers will get ample supplies at reasonable figures. The great extension in new uses for rubber in latex, solid coagulum, and the vulcanized product; the earnest endeavors and extensive activities of rubber growers' and manufacturers' associations in promoting a better accord among all branches of the industry and in cultivating among ultimate buyers a keener appreciation of the aims and fair requirements of the rubber trade; and the remarkable scarcity of labor troubles, a condition due not merely to improved business but to the spread among rubber manufacturers of an enlightened, give-and-take spirit in dealing with employes, are notable achievements of 1923.

Notable among the advances might be cited the colossal outturn of motor vehicle tires, the greatest in automotive history and the successful launching of the new low pressure tire; the rapid increase in the perfecting of the cord tire, and the steady development of bigger and better solid tires. Then too the taking over by one of the great rubber concerns of the exclusive right to manufacture a famous type of giant dirigible balloon, which may mean much in the way of aeronautical development during 1924.

There was much speculation in 1923 on the possibilities of the direct utilization of latex, and in this connection an odd trend was noted, really a reversal toward an adaptation, admittedly scientific, of the earliest mode of applying rubber, even recalling the primitive Brazilian's crude proofing with sulphur and rubber milk. Much headway was made in the methods of latex-impregnation of fabrics and in the production of spray-dried latex, and encouraging tests were made by paper makers of latex as a beater size. Nor should be forgotten the gel-molding and vulcanized solution methods, as well as the 2-gas cold vulcanizing process. Most notable, also, was the marked revival in the United States and abroad of interest in rubber paving, with the hope rising that soon somewhere along this line might be found a use for rubber equalled only in the making of tires.

Machinery builders brought out many new types of apparatus to cut costs, enhance the quality, and increase quantity in rubber manufacture, and chemists made valuable additions to the lists of accelerators and other compounding ingredients; inventors evolved many articles to add to the 50,000 or more useful and ornamental things made of rubber; technicians enhanced the accuracy of

New Year's Greetings

ONCE again and heartily we wish our readers the world over a truly Happy New Year; and many a twelve months to follow, abounding in peace and prosperity.

tests for cured and uncured rubber; and efficiency experts speeded up the movement toward general standardization, promising for the coming year a marked elimination of needless sorts and sizes and non-essentials generally.

Industrial Accident Ratio Drops

WHILE it is distressing to learn that public accident deaths are increasing in greater percentage than population growth in the United States, 75,000 being recorded for 1922, on the other hand it is comforting to find in the annual report of President Marcus A. Dow of the National Safety Council that, while the public toll of lives is out of all reasonable proportion, there has been a progressive decrease in the number of industrial accident fatalities. Perhaps the appalling wastage of human life may be the price we are paying for progress, but it is a price that can and should be scaled down considerably, primarily because it causes so much sorrow and suffering and secondarily because so many fatalities and twenty times as many injuries mean to the country an economic loss of perhaps a billion dollars yearly.

Being essentially business bodies, corporations may always be soulless, but to an ever increasing extent manufacturing companies, foremost among them being many of the larger rubber concerns, are displaying a solicitude for the safety and well being of their employes that indicates the possession of at least a heart, if not a soul. Indeed, so striking has been the success of industrial leaders in steadily reducing the dangers to life and limb in their own plants that their practical aid is being eagerly sought by civic workers in a general campaign for lessening the host of hazards that beset every community.

Singapore Rubber Paving Stands Up

MUCH satisfaction is expressed in Singapore with the rubber paving laid experimentally at one of the exits and adjacent to one of the busiest box offices of the Harbor Board; and, if a way be found for lessening the cost, it is likely that this improved road surfacing, known as Cresson Rubber Block, will be laid extensively here and elsewhere. The space used for the roadway test is 30 by 15 feet (50 square yards), and the paving was put down July 6, 1922. The blocks are 9 inches long, 3 wide, and 3¼ deep, and are formed of a hard basic compound with about ⅜ of an inch of rubber capping directly vulcanized on the 3-inch width of face, and without iron clamps or other mechanical attachments. They are laid on a 6-inch concrete cement base, and the test area is inclosed with granite blocks.

Up to the end of November, 1923, it is estimated that fully 300,000 tons of loaded and unloaded motor lorries, wagons, bullock carts, and passenger automobiles passed over the rubber pavement, yet close examination revealed practically no wear. In only a couple of spots was any movement of the surface remarked, and that was a trifling forward creeping, due probably to a slight pressure from the granite curbing. Signs of slipping or skidding were lacking, even though the pavement is subjected to fast and slow-moving traffic, and heavily laden lorries and wagons pull up and restart upon it. The roadway is exposed to the full rays of the sun, and the rubber area has had no special treatment since being laid.

Free Trade Wins in Britain

THE idea of Britannia ruling the waves while Columbia is ruling the British home market seems incongruous to our friends in the United Kingdom. English rubber manufacturers, for instance, cannot see much glory in the nation bearing the bulk of overseas commerce when they cannot sell, except at a loss, a 30 by 3½ inch cord tire for less than 39 shillings wholesale, while Americans, after paying freight and insurance, can land such tires on the British market and make a profit in selling them at 33 shillings ($7.59) apiece. Despairing of the early cessation of the "temporary dumping of surplus stocks," as the free trade element termed it, and of the return of normalcy soon, many manufacturers could see but one remedy for their industrial ills—the adoption of a high import duty.

But the British electorate last month evidently did not deem conditions serious enough to warrant any radical change in the nation's old commercial policy; hence rubber and other manufacturers, unable to get assurance that the government will shield them from foreign competition, find themselves with no recourse but to devise cheaper means of production if they would hold their own against the "invaders." Incidentally, it may be added that not a few exporting American manufacturers find no small amount of comfort in the outcome of the recent Parliamentary contests.

RUBBER RESTRICTION MAY BE UNSOUND ECONOMICALLY and may invite reprisals, but it abides; and after one year's operation the regulations show no more sign of relaxing than when they took effect. Thus, for the quarter ending January 31, 1924, the percentage of standard production of crude rubber that may be exported from Ceylon, the Straits Settlements, and the Malay States will again be 60 per cent. Had the average price for the quarter ended October 31 been 6-1000 of a penny more, 5 per cent more rubber would be released during the current quarter. In other words, the growers must average 1 shilling 3 pence per pound if 65 per cent is to be exported, whereas for the three months up to October 31 last the average price was but 1 shilling 2.994 pence per pound. Lost by an eyelash, so to speak.

"SEE THAT NONE RENDER EVIL FOR EVIL UNTO ANY man; but ever follow that which is good, both among yourselves, and to all men." 1 Thess. 5:15.

Why Not Put the Tire Business on a Business Basis?

A Half Billion Dollar Industry—Obstacles to United Action by Tire Makers—Where Dealers Are at Fault—Makers Working for Better Conditions—Price Rebating Should be Abolished—Sales Volume Limited

By H. P. Wilkin

PROBABLY no one will deny that the selling of tires is conducted on most unbusinesslike lines, or that the unsound lines on which it is conducted are responsible in large measure for the dissatisfaction felt and frequently expressed by those who are in the business. Most of the complaints that find expression are made by dealers and are directed at manufacturers. Yet it is debatable if the manufacturers do not have quite as many reasons for dissatisfaction as the dealers.

In most of the discussion that has found its way into print of late, the tire makers are blamed for most of the evils in the trade, perhaps because they comprise the only element in the trade that has the potential power to correct the abuses. Dealers, however, are ill-advised to stand behind their glass windows and make faces. At least a share of the responsibility for unsatisfactory conditions that have crept into the business falls upon their own shoulders. This may not be a palatable charge but if the fact is accepted it may render a cleaning up process easier and more quickly accomplished.

Some of the ills are a hangover from more hectic days when profits were large and easily made. It must be realized now that the time has come to sober up and find out just where the business stands. Apparently the manufacturer and the dealer will have to help each other to maintain a steady footing and follow a straight course to the desired end.

Industry No Longer Needs Nursing

With a yearly production of 40,000,000 casings and 50,000,000 tubes, the tire industry represents annual sales amounting to well over half a billion dollars. So it has outgrown its swaddling clothes and hardly needs babying any more. It should be able to take its place among the important industries of the country and adopt the principles that give stability and character. It is a large and essential business, contributing, through the motor vehicle, to the pleasure and the economic, educational and social progress of all the people of the land. So it is well worth while to devote some thought and effort toward putting it on a safer and better basis.

An excess of manufacturing capacity at the present time is the cause of competition among manufacturers that has forced them to adopt methods for self-preservation which most of them probably would admit are detrimental to the industry as a whole. In the effort to maintain and increase individual volume by getting sales away from one another, they have driven prices down to a point where there is little profit for anyone in the trade; they have unloaded job lots and dumped equipment stocks on the retail trade for sale as replacement goods; have put out second and third grade brands to fight the cheap makes, increased dealers' discounts with the foreknowledge that the result would be the widespread slashing of consumer lists; have tried to recover lost profits by raising prices again beyond the point where the public would stand for them, and have loaded up the dealers on spring dating orders covered by trade acceptances and then incurred the resentment of the dealers by reducing prices at the beginning of the retail selling season.

Legal Obstacles to United Action by Makers

These were not concerted actions and no one company initiated all of them, but when any one of the leading companies makes a move out of line, it is promptly followed by the others to prevent it from gaining an advantage. That is only human nature; dealers do the same where competition is very keen. Dealers, however, criticize the manufacturers for not getting together and taking unified action, forgetting apparently that the Federal Trade Commission and the Department of Justice frown upon almost every united action tending to alleviate the economic effects of unrestrained competition except when indulged in with the sanction of our federal laws by farmers and labor unions. Manufacturers are liable to prosecution if they agree among themselves to limit production, to fix uniform production costs or uniform discounts, to maintain prices or do anything else in combination that tends to restrict trade or support prices. Agreements with dealers to maintain list prices, to represent one manufacturer exclusively, or to have exclusive territory are under the ban either of some federal law or the laws of one or more states.

The Rubber Association can only "recommend" certain practices to its members; it cannot force any member to abide by its recommendations and it must be very circumspect in the recommendations it makes. The manufacturers are therefore rather helpless as regards many things that would undoubtedly benefit the dealers as well as themselves and might even be better for the public. Even if no member of the association kicks over the traces, there are always enough makers outside to cut into the sales by departing from the policies that the more experienced manufacturers have determined to be best in the long run.

Where Dealers Are at Fault

If it is next to impossible to induce from one hundred to two hundred manufacturers to adhere to good business principles, how utterly impossible to accomplish such a result with 50,000 or more tire dealers. In their efforts to stay in the business and make a living, too many dealers take the easiest road to larger sales by offering tires at such a small margin that there is no profit after paying all the expenses incidental to selling. Then, although there is a spread of 30 per cent or more between the wholesale and retail prices, they protest to the manufacturers that there is no money in the business. Price cutting has become so general that manufacturers are withdrawing their retail lists as obsolete, leaving it to each dealer to fix his own resale prices. It seems certain that this will result in still more chaotic conditions in the trade—a result directly attributable to the dealers themselves, who raised something of a storm over the publishing of reduced consumer prices last spring after most of them had loaded up speculatively on trade acceptances during the winter in expectation of further price increases or at least a continuance through the season of the winter lists.

There was no compulsion for them to buy so heavily but in the eagerness to make profits after two exceedingly lean years, they tied the noose around their own necks—but called the manufacturer the hangman. All might have been well if no manufacturer had reduced prices until midsummer or later—and again it might not. It may very well be doubted if any objection would have been raised to publication of consumer prices if the change had been an increase instead of a decrease. Prices now seem as low as they are likely to go, with rubber, cotton and labor fairly stabilized at present figures and likely to go up rather than down. When the time comes for tire prices to go up again, it is going

to be a good deal harder for dealers to push up resale prices correspondingly without the support of manufacturers' retail lists.

Dealers Play Maker Against Maker

A small percentage of dealers try to squeeze unfair and unreasonable concessions of all sorts out of manufacturers by resorting to implied if not actual threats to "throw up the line." This is a rather despicable means of forcing him to violate his own rules for conducting his business and also the recommendations of the Rubber Association. Thus, while the dealers are calling on the manufacturers to get together and correct the evils in the trade, some of them are balking the efforts that are being made to bring about the action that alone can abolish them. If it were only a few of the smaller dealers that indulged in such practices their demands could be resisted, but unfortunately it is more often the large dealer, who feels that the volume of his purchases is too important for the manufacturer to refuse the concessions he asks.

A dealer is not blamable for trying to get the best prices he can from the manufacturer, but it is reprehensible to strenuously oppose the assessment of a perfectly just service charge on returned goods, to fight for rebates on price drops on goods bought before the thirty-day period, to demand an excessive allowance for advertising and dealer helps, to seek to get unreasonable allowances on adjustments and to try in various other ways to force a little more out of the manufacturer. Every dealer who succeeds in such practices does so at the expense of other dealers who do not indulge in them and makes it more difficult for the manufacturers to cooperate to eradicate practices that hurt the whole dealer body. Such dealers do not hesitate to base their demands on statements that some other manufacturer is waiving the service charge or rebating for more than thirty days or giving them some other special advantage, thereby intensifying the effects of competition.

Furthermore, while dealers are themselves complaining of the low price of tires, knowing that they are one of the very few articles that are cheaper now than before the war, and asserting that there is no money in the tire business, they themselves make price their main selling factor rather than quality, mileage service and protection afforded the buyer their own and the manufacturers' responsibility. They quickly let a manufacturer know if a competing make of tire is being sold cheaper and so help further to hammer down prices.

Makers Working for Better Conditions

Fortunately, there are evidences of a movement to place the industry on a more businesslike basis. One of these was the adoption of the standard warranty, which has already done a lot to abolish the old evil of absurd adjustments. There was some excuse in the earlier days for mileage guarantees and liberal allowances on poor tires but with the superior quality and unprecedentedly low prices of present-day tires, all that any user can rightfully expect is an allowance for obvious defect in material or workmanship. Dealers should therefore cooperate wholeheartedly with the manufacturers in the endeavor to scotch this adjustment evil.

With the October price reduction some of the manufacturers reduced the cash discount from 5 per cent to 2 per cent. This, too, was a move in the right direction. Probably there is no other industry of the size of the tire business that gives 5 per cent for cash. The usual discount in commercial lines is 1 or 2 per cent for cash in ten days. Losses of accounts are not exceptionally heavy in the tire trade and the larger tire companies are not unduly cramped for money. Five per cent for cash in thirty days means a rate of 60 per cent a year; that is, a dealer who regularly discounts his bills can make 60 per cent on his investment, and of course the manufacturer pays it. Now, money is not worth any such rate. It can be borrowed at the bank for 5 to 6 per cent. In passing, it might be observed that the 3 per cent cut from the cash discount was embodied in the 15 per cent price reduction. So far as the dealer's profits are concerned, it is immaterial whether he gets his discount in the form of a cash discount or a trade discount if he pays his bills when due. The lower cash discount rate, however, works to the advantage of the slow-pay dealer.

Why Not Put the Business on a Cash Basis?

Reduction of the cash discount raises the pertinent question if some day the tire business should not be put on a strictly cash basis. This may seem impossible now, but the automobile business has always been conducted on these lines, just as the American export trade is done. The dealer deposits about 25 per cent cash with order and the cars are shipped sight draft bill of lading for the balance. It is very doubtful if the car business could have grown to anything like its present magnitude in so short a time on a credit basis. The manufacture of automobiles is tremendously expensive and the manufacturers had to have all their money to carry on production and expansion. It would have been impossible if they had had to carry millions of dollars of dealer credits on their books and absorb losses of innumerable accounts. An important result of the cash basis is that in general the retail sale of cars is in the hands of a high class of merchants who are financially sound and conduct their establishments on business principles.

Much dealer complaint has been raised against the "loading up" of dealers by manufacturers and in a recent recommendation of the Rubber Association an attempt was made to bring about concerted action to remedy this by offering to take only one trade acceptance order from a dealer and to give shorter dating terms to city dealers and to dealers in the extreme southern states where the use of cars is not interfered with by snow and cold weather.

Price Rebating Should Be Abolished

One of the practices in the tire trade that probably is responsible for most of the "loading up" is rebating on price drops. This has the sanction of the association, which recommends rebating the difference between old and new prices on all orders shipped within a thirty-day period before the reduction and price protection until May 15 on spring dating orders covered by trade acceptances. The very obvious effect of this is to encourage the dealer to buy heavily on speculation, knowing that if prices go up he stands to gain and if they go down within the protection period he will not lose.

Rebating cannot be defended as a sound business policy. It is of doubtful benefit to the dealer and is costly and a nuisance to the manufacturer. The dealer may delude himself that he is the gainer by it but it actually tends to prevent stabilization of the trade, causing dealers to obligate themselves too heavily at certain periods and then sometimes to unload at a sacrifice in a belated spring or a dull market to meet their obligations, thus demoralizing the market and losing the profits they had counted on making.

Results are as bad to the manufacturer, or worse. With price protection on trade acceptances extending over periods up to six months and with thirty days' protection on all purchases on regular terms, the manufacturer is really selling at his lower lists most of the year. Confronted with rebates and adjustment losses, he hardly knows from one year's end to another what his actual profits are, if any.

Advantage might have been taken of the October heavy price reduction to abolish the price reduction evil, but perhaps the manufacturers feel that they can take only one step at a time and that the decrease in cash discount was all they dared venture. It is a very logical time, however, with present rock bottom prices, to inaugurate this reform.

As a matter of fact, there is no more reason why the manufacturer should pay back to the dealer the difference on a price drop than for the dealer to pay the manufacturer the difference on a price rise. "It is a poor rule that doesn't work both ways" and "what is good for the goose is good for the gander"—but what a

howl would go up from the dealers if the manufacturers were to try to put such a rule in effect!

The only way to achieve equity is to abolish the rebate system. The two elements in the industry ought to meet on a dignified, man-to-man footing. Dealers would gain a better sense of independence and self-reliance if they ceased to lean on the manufacturers, and manufacturers doubtless would breathe a great sigh of relief if several thousand dependent dealers were to hop off the back of each maker. Every transaction ought to be closed when goods are bought at the current price and paid for. Rebating does not have the effect of stimulating retail sales for the simple reason that the protection does not extend to the consumer but affects only the unsold goods in the dealer's hands. And aggregate ultimate sales are not increased by inducing the dealers to buy freely unless they can somehow pass the inducement on to the public.

Total Sales Volume Definitely Limited

It doesn't appear to be sufficiently realized that there is a pretty definite volume of tire business to be done from year to year. Consumption is fixed by the number of cars in use, the average mileage they run and the durability of the tires used. The fact that tires are giving much longer mileage service than ever before has reduced the consumption per car but no figures are available to show whether or not the average mileage of the cars in use is less than in more prosperous times. In any case, there is just so much business in any year to be divided among the manufacturers and the dealers. Viewed in this light, it becomes clear that all the strenuous efforts that are made to sell tires are merely attempts to wrest some of the business away from competitors, because the aggregate volume cannot be increased in any marked degree.

Tires are bought by consumers only as needed. They are not a substitute for any other article, so the industry cannot grow at the expense of some other industry, as, for example, the motor bus business has developed at the expense of the electric railway companies, or the composition roofing industry has grown to the detriment of the shingle trade. When any big tire maker tries to steal a march on the rest he is deluding himself with false hopes and in the end suffers with the rest of the industry for any ill-advised action. If he suddenly reduces prices when a cut is not warranted by lower material, labor, manufacturing and selling costs, the other makers immediately follow the move in self-defense. The same thing applies to any other device adopted to gain an advantage and the result is that prices are driven down too low, discounts are increased too much, too long credits are allowed, there is too much consignment business, or other practices become general, that reduce profits to the vanishing point or create unwholesome conditions in the trade.

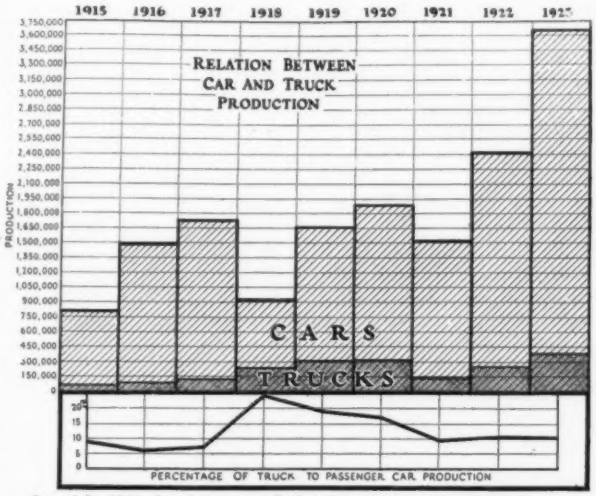
The tire business is rapidly getting down to a basis that means the survival of those manufacturers who produce the best tires and sell them at the lowest prices that will net a return comparable with the average return on invested capital. Present large sales of very cheap inferior tires may seem to contradict this statement but it will be noted that the standard companies are now marketing low-priced tires of good quality to meet the consumer demand for cheapness, and it is a safe assumption that with their great volume of production the big companies can give better value per dollar than the little makers in any grade of tire they choose to produce.

The large profits that lured a horde of little tire companies to enter the field are a thing of the past. Businesslike practices that have proved safe and sound through many years in older industries will have to be adopted and dealers will have to share with manufacturers the task of purging the trade of such of the causes of its ills as can be eliminated by self-treatment by the industry, leaving full restoration to strength and prosperity to time and general improvement in economic conditions.

Commercial Truck Production During 1923

With figures for the November production of passenger automobiles and trucks reaching 325,135, and that of the eleven months at 3,717,709, according to the National Automobile Chamber of Commerce, a total output for the year 1923 of 4,000,000 motor vehicles is evidently assured.

In a measure the commercial truck development is comparable to the amazing increase in recent years of passenger automobiles, as the total production during 1923 of the former is estimated



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Production of Motor Cars in the United States

at approximately 375,000, while the corresponding output of the biggest previous year, that of 1920, totaled only 322,000. The 1919 production of commercial trucks stood at 316,000, as compared with only 74,000 in 1915. It will therefore be seen that along this particular line the year 1923 represents a record year, with the growing truck production an evidence of the nation's increasing commercial activities. With the proposed improvements in the highway system even greater advances in truck output will undoubtedly be demanded.

RIMS INSPECTED AND APPROVED DURING NOVEMBER, 1923

Size	Number	Pct.
26x3 M/C	707	0.0
28x3 M/C	3,982	0.2
30x3 Cl	103,847	5.8
27x3½ S. S.	10,397	0.6
28x3½ S. S.	93	0.0
30x3½ Cl	859,298	47.8
30x3½ S. S.	337,765	18.8
32x3½	9,974	0.6
28x4 S. S.	3,958	0.2
29x4 S. S.	2,126	0.1
31x4 Cl	87,016	4.9
31x4 S. S.	1,322	0.1
32x4	190,765	10.6
33x4	17,044	1.0
34x4	1,067	0.1
29x4½	7,533	0.4
32x4½	127,999	7.1
33x4½	81	0.0
34x4½	20,144	1.1
36x4½	1,032	0.1
30x5	270	0.0
34x5	7,110	0.4
32x6	925	0.0
36x6	4,047	0.2
34x7	705	0.0
36x8	30	0.0
Millimeters	362	0.0
	1,799,597	100.0

Tire and Rim Association

Rubber Trade Inquiries

The inquiries that follow have already been answered; nevertheless they are of interest not only in showing the needs of the trade, but because of the possibility that additional information may be furnished by those who read them. The Editor is therefore glad to have those interested communicate with him.

(313) We are asked for names of makers of machines for cutting stationers' rubber bands.

(314) Request is made for a list of concerns that make machines for winding hose with wire.

(315) A correspondent wishes to get in touch with an engineering company which can give complete estimates on a tire plant in South America.

(316) We are asked for the address of a manufacturer of rubber tiling for floors.

(317) A subscriber desires a list of dealers or brokers handling crêpe rubber soling.

(318) A list is requested of people who can supply hard rubber dust.

(319) We are asked for a list of exporters of automobile tires and tubes.

(320) Inquiry is made for a machine to be used in cutting crêpe rubber soles.

(321) We are asked to furnish names of manufacturers prepared to handle an order for a patented pneumatic belt, cloth-covered.

(322) Request is made for address of a manufacturer of ring rolling machines for dipped rubber goods and for the address of a company manufacturing rubber ink for printing on toy balloons.

Foreign Trade Opportunities

Address and information concerning the inquiries listed below will be supplied to our readers through the Foreign Trade Bureau of The India Rubber World, 25 West 45th street, New York, N. Y. Requests for each address should be on a separate sheet and state number.

NUMBER	COUNTRY AND COMMODITY	PURCHASE OR AGENCY
8227	Austria—Snow boots and shoes and overshoes.	Purchase and agency
8251	Netherlands—Rubber articles of all kinds...	Purchase and agency
8274	Austria—Tires and inner tubes, 2,000 to 5,000 monthly	Purchase and agency
8303	Java—Druggists' rubber sundries and other rubber goods	Purchase
8317	England—Rubber toy balloons	Purchase
8408	Ireland—Rubber novelties	Agency
8414	Belgium—Belting and industrial and technical articles	Agency
8420	Bulgaria—Tires, galoshes, and all kinds of rubber goods	Exclusive agency
8424	Netherlands—Tires for automobiles	Purchase and agency
8440	Sweden—Rubber articles for hospitals and pharmaceutical trade	Purchase
8466	France—Tire-repair gum and appliances	Purchase and agency
8564	Austria—Tires	Agency
8569	Austria—First quality tires, 2,000 to 3,000	Agency
8612	Czechoslovakia—rubber soled footwear	Purchase
8617	India—rubber novelties	Agency
8622	Poland—tires	Agency
8634	Latvia—rubber goods	Agency
8635	Latvia—raw rubber	Purchase and agency
8639	Austria—tires	Agency
8642	Austria—dental caoutchouc	Agency

Trade Lists Available

Mimeographed copies available on reference to titles and file numbers.

NUMBER	COUNTRY AND COMMODITY
LA-12084	Brazil—canvas rubber sole footwear; firms that may be able to import.
EUR-11051	Spain—canvas rubber soled footwear; firms that may be able to import.

Foreign Tariffs

Germany

A special circular numbered 356, and which cancels a previous circular numbered 144, has reference to certain German import duties levied on rubber goods. The seventeen items mentioned include wares of soft and hard rubber.

Italy

Temporary free importation into Italy of certain goods which are to receive further manufacture in that country has been granted, according to a royal decree of September 10, 1923. Among the commodities mentioned is cloth of all kinds, to be rubberized and sold in the piece or made into clothes or other waterproof material. The minimum quantity imported is fixed at 50 kilos, with a period for re-exportation of one year.

Japan

According to the recent Imperial Japanese Ordinance, truck tires are temporarily admitted into Japan free of duty, while automobile tires are included as "parts of automobiles" on which temporary reduction of duty has been made from 25 per cent ad valorem to 12½ per cent ad valorem. The decree is effective until March 31, 1924.

JAPAN'S IMPORTATIONS OF AMERICAN RUBBER THREAD

Japan, which in the year 1922 purchased American-made rubber thread valued at $117,871 and was outstripped only by England and France, has already taken during the first eight months of 1923 an amount valued at $92,377. In comparison the other two countries mentioned show for 1923 somewhat of a decline.

Meeting of Executives, Mechanical Department and Factory Managers, of the United States Rubber Co., Providence, Rhode Island, November 19, 1923.

Building Balloon Tires[1]

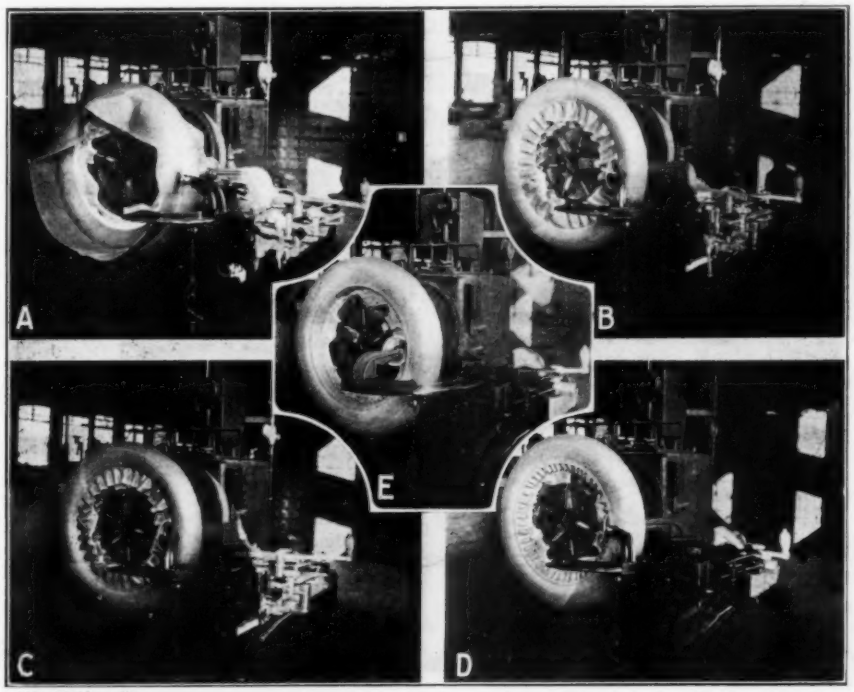
Reason for Balloon Tires—Production Operations Similar to High Pressure Tires—The Thropp System—Band Building—Applying the Fabric Bands

IT IS claimed that the idea of building low-pressure tires originated with the Dunlop Co. in England previous to 1914. The occurrence of the World War, however, deferred the development of their manufacture. Since the war American tire manufacturers, with characteristic enterprise, have undertaken solution of the practical problems of production of low-pressure tires, which are popularly designated "Balloon" tires.

Reason for Balloon Tires

Strength and mileage have been, heretofore, the predominating objectives of tire design and construction, with riding comfort incidental. The primary essentials of strength and mileage having come well under manufacturing control, consideration of how to perfect tires to riding comfort was taken up to meet the well defined demand of tire users for better tire riding quality.

Present motorists require mileage as well as riding comfort from their tires. This means complete elimination of jolting and vibration, in fact, virtually floating over road obstacles that are absorbed by the tire. Therefore, engineers, designers and tire manufacturers are now engaged in solving the problems of making balloon tires.



Ajax Rubber Co.

(A.) BEGINNING TO STITCH SECOND BAND PLY; (B.) SECOND BAND PLY PARTLY STITCHED; (C.) SECOND BAND PLY FULLY STITCHED; (D.) THIRD BAND PLY STITCHED TO BEAD; (E.) STITCHING THIRD BAND OVER BEAD BASE

Thropp System of Building Balloon Tires

Large Section Truck Tires

Large section pneumatic tires of heavy construction are familiar and successful as truck tires.

These tires require high pressure inflation to sustain heavy loads, losing in resiliency although retaining enough for their purpose. Balloon tires are solely for passenger car use and are designed to sustain their load with pressures as low as 20-25 pounds. This they do by reason of increased air volume over the ordinary tire.

While not yet in general use, balloon tires are giving satisfactory service and perfect riding comfort. Efforts are being made to standardize them in anticipation that they are destined to become popular equipment.

Similarity to High Pressure Tires

There is much similarity in the operations necessary for the production of the ordinary and balloon tire types although there is much difference in the features of design, proportions and arrangement of the component parts. The differences, however, do not change the usual methods of preparing the materials for building. The rubber stocks are calendered upon fabrics of appropriate weights and sheeted for treads, cushion and sidewalls.

The cord fabric plies are bias cut of suitable widths, and rolled ready for the tire builders' use. The wire core beads are built up and semi-cured as for ordinary straight-side tires.

Thropp Tire Building System

Due to their comparatively bulky size balloon tires are best built on tire-making machines rather than by hand. This requirement affords much opportunity for engineering design to secure successful results economically. There are several successful tire building systems; one of which is the Thropp method. In this system two principal machines are used, the banding machine and the tire building machine.

The band machine is arranged for building endless bands of rubbered fabric by uniting and rolling together bias cut rubbered fabric strips in two cross plies ready for the tire machine operator to apply over the core.

The building machine is motor driven and is adapted to receive any size of tire building core and combines mechanical devices by which hand work is eliminated. The fabric on both sides of the core is stitched down mechanically in one operation.

In this connection further details are probably unnecessary be-

[1]Copy supplied by John E. Thropp's Sons Company, Trenton, N. J.

cause the essential operating features of balloon tire building are indicated in the illustration on the preceding page.

Building up the successive plies of cord fabric on the Thropp machine as here pictured may be briefly described as follows:

Band Building

The first two plies having been measured and made endless on the banding machine, are stretched over the building core and stitched down. The third and fourth bands are similarly measured and banded, stretched over and stitched over the first fabric ply. The successive stages of ply building over the core are then continued in the following manner.

Applying the Fabric Bands

Referring to the illustration, *A* shows the first ply already stitched around the core and the second ply laid and the operation of stitching it down just begun. In *B* the same band is seen being stitched farther around the core; at *C* the second band has been stitched down completely. At this point the beads with their flippers or wrapping strips are next placed to gage marks and stitched securely in place.

The unstitched part of the second band shown in *C* is then turned up around the bead and stitched down upon the beads.

The third two-ply measured band is next stretched over the two bands already in place and stitched over them. The operation of applying the third band down to the top of the bead is pictured in *D*.

The central picture, *E*, in the group shows the stitching disks with angle changed to complete the stitching along the base of the beads.

Finishing and Curing

When the final ply is applied to the carcass the core is removed from the machine and placed on a building stand. Here the cushion, breaker and tread are built on the carcass in successive order, when the tire is ready for curing and final inspection.

It should be particularly noted that the tire building operations are effected entirely by the machine without the necessity of any hand work being done. The success of the system is indicated by the fact that numerous machines of this type are in daily operation, making tires ranging from Ford sizes to balloon sizes and beyond, namely, from 3 to 10-inch cross-section, inclusive.

POWER USED BY RUBBER INDUSTRY COMPUTED AND ANALYZED

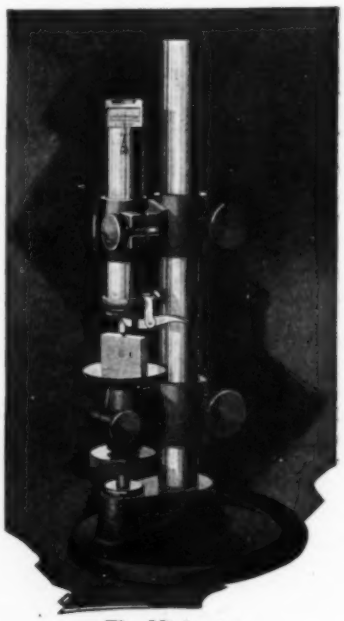
In a recent volume summarizing the data collected by the United States Government through its latest census of manufactures, the National Industrial Conference Board has published some valuable information regarding the rubber industry, as representing one of the fifty leading productive occupations of the country.

In connection with the installation of primary power the rubber industry ranks fifth in its percentage of increase, the gain from 1914 to 1919 being 115.4 per cent. During the year 1919 the rubber factories of the United States included in their equipment 226,539 steam engines and turbines; 5,614 water wheels and motors; 3,773 internal combustion engines; 193,347 electric motors run by purchased current; 614 other types of equipment run by purchased power; the total figure being 429,887.

The percentage distribution is as follows: steam engines and turbines, 52.69; water wheels and motors, 1.31; internal combustion engines, .88; electric motors run by purchased power, 44.98; other purchased power, .14. In regard to the horsepower of the electric motors used, and the per cent of primary power it has been found that the purchased current totals 45 per cent and the current generated in establishments, 37.7 per cent; a total of 82.7 per cent. Based on heating values, the percentage distribution of fuels used in rubber factories during the year 1919 is given as: bituminous coal, 90.3 per cent; anthracite, 5.5; coke, .2; gas, .4; and oil, 3.6.

A PRECISION MEASURING INSTRUMENT

The Minimeter is a precision measuring instrument which combines scientific exactness with commercial adaptability. It is practical for the tool rooms of rubber mills where it is used for measuring metal parts which must be extremely accurate in dimensions.



The Minimeter

The stand illustrated has a table 2⅜ inches in diameter and a range 5¼ inches high by 2⅜ inches wide. The instrument is furnished with scale divisions of one ten thousandths of an inch. The divisions are sub-divided into halves so that multiples of the above unit may be read. The scale reads ten units either side of zero, readings to the left indicating minus and to the right indicating plus.

The Minimeter is set by means of standards or gage blocks, the pointer being brought to zero on the scale by the adjustment of the movable base at the lower end of the stand. The sample standard or gage is then removed and the instrument is ready to measure parts and define on the scale the amount of error in manufacture.—The Norma Company of America, Anable avenue, Long Island City, N. Y.

JAPANESE ELECTRICAL PROJECT FURTHERED BY WESTINGHOUSE

A Japanese electrical manufacturing company is in process of formation through an arrangement between the Westinghouse Electric International Co., 165 Broadway, New York, N. Y., and certain leading Japanese interests, the new organization to be known as the Mitsubishi Denki Kabushiki Kaisha, or in English, the Mitsubishi Electric Manufacturing Co. Unconfirmed advices report the capitalization at 15,000,000 yen, or $7,500,000.

This important Japanese project is the outcome of negotiations which have secured a cooperative agreement whereby the Westinghouse company is to supply technical skill and experience to the Japanese organization. The aim is to begin the manufacture of electrical machinery and supplies, as well as to still further extend electrical developments in Japan, which, mainly through Westinghouse efforts in the past, are now of considerable importance. L. A. Osborne, president of the Westinghouse International Co., and General Guy E. Tripp, chairman of the Westinghouse board, are now in Japan, and have been recently decorated by the Japanese Emperor.

NEW UNIT FOR GUAYULE PRODUCTION

Operations are scheduled to commence about February 1, 1924, at the new unit for the production of guayule rubber at Estacion Catorce, S. L. P., Mexico. The supply of washed and dried guayule will be sold by the Continental Rubber Co., of New York, while the new factory will constitute the third now being maintained by the Continental Mexican Rubber Co., whose main offices are at 120 Broadway, New York, N. Y.

Water Dispersions from Coagulated Rubber, Balata and Gutta Percha—IV

By John B. Tuttle [1]

IN a previous issue of this journal[2] there was described the Pratt Process for the dispersing of rubber, etc., in water. Briefly, the process comprised dissolving rubber, or a rubber compound, in a solvent such as benzol, forming a protective coating of soap *in situ* around the rubber globules, and dispersing these globules in water. The benzol was removed by evaporation, leaving a suspension or dispersion of rubber in water.

It was quite well understood by all those interested in this process that its adaptability and value would depend very largely upon the ease with which the benzol could be removed from the rubber, the efficiency of the recovery system and the cost of the entire treatment. It was obvious, however, that the best way to avoid solvent costs was not to use any organic solvents whatever. It was found that when the rubber-benzol cement was kneaded gently in an enclosed mixer, the rubber could be dispersed from a cement of much higher rubber content than was possible with stirring, and thus step by step by the alteration of the method in one way or another, there was evolved a process by means of which crude rubber or a rubber compound containing crude rubbers, reclaims, oil substitutes, oil softeners, sulphur, pigments, colors, organic and inorganic accelerators, etc., could be dispersed in water without the use of any solvent whatsoever. Thus instead of a process requiring some hours to complete, and which involved the use and recovery of organic solvents, a process was produced that required scarcely half an hour from the time the rubber left the warming-up mill to the time when it was ready for dilution with water to any desired consistency. The process is so simple that once the conditions have been worked out for any particular stock, it may be transferred to the factory and put into production, using only ordinary unskilled labor. The cost of the materials used in the process are such, that, taking for example a stock such as a high-grade tire friction, the compound costs would not be materially increased. Table I will give some interesting examples of stocks which have been dispersed to date. They are only a few of the many which have been run, but will serve to illustrate the elasticity of the process.

Table I

SPECIMEN COMPOUNDS FOR DISPERSION

	1	2	3	4	5	6	7	8	9
Smoked sheet	42.5	21.0	65.2	60.0	79.0	70.0	....	....	25.0
Pale crêpe	40.0	24.0	17.0	....	....	....	70.0	50.0	....
Slab rubber	....	....	....	....	....	....	....	50.0	....
Roll brown crêpe	....	....	3.0	....	....	6.0	....	....	....
A-7	1.0	1.0	...	1.0	....	5.0	....	....	....
A-19	....	....	....	....	....	....	....	2.0	....
Hexa	....	....	0.7	....	....	....	3.0	....	....
D. P. G.	....	....	....	....	2.0	....	....	....	....
Zinc oxide	5.0	50.5	2.5	4.0	5.0	10.0	10.0	20.0	10.0
Sulphur	5.0	2.0	9.0	5.0	4.0	4.0	10.0	7.0	....
Lithopone	....	....	....	....	....	....	....	21.0	40.0
Magnesium oxide	....	1.5	....	....	....	....	....	....	....
Antimony sulphide	....	....	....	....	10.0	....	....	....	....
Red oxide of iron	....	....	....	....	....	4.0	....	....	....
M. R.	4.0	....	2.6	5.0	....	....	....	....	....
Glue	2.5	....	....	5.0	....	....	....	....	....
Petrolatum	....	....	....	5.0	....	....	....	....	....
Cotton seed oil	....	....	....	10.0	....	1.0	....	....	....
White substitute	....	....	....	5.0	....	....	5.0	....	25.0
Rosin	....	25.0	....	....	....	....	2.0	....	....
Totals	100.0	125.0	100.0	100.0	100.0	100.0	100.0	150.0	100.0

In addition to these compounds, we have dispersed one hundred per cent of materials such as fine Pará, smoked sheet, pale crêpe, slab rubber, tire tread reclaim and shoe reclaim; in other compounds we have added compounding materials such as amber crêpe, reclaimed friction, various grades of Pará rubber; accelerators such as the ultra accelerators, of which we have used piperidine-piperidyl dithiocarbamate, dimethylamino, dimethyl-dithiocarbamate, Aksel, super-sulphurs No. 1 and 2, and the more common and slower accelerators such as aniline and thio; pigments such as barytes, whiting, aluminum flake, clay, carbon black, ultramarine, chrome green, talc; softeners such as palm oil, brown substitute, paraffin, shellac, etc.

When the dispersion has been obtained, the ratio of rubber to water is usually around 80 per cent to 20 per cent. Ordinarily this is too stiff, and the dispersion is therefore diluted to around 60/65 per cent of rubber to 40/35 per cent of water, but the dilution may be carried on to an extremely dilute state without causing coagulation. For commercial purposes the 80 per cent is too concentrated, because, for example, in the application of such a stock to fabric the latter would take out the moisture so rapidly as to cause coagulation through what practically amounts to drying.

When the dispersion is applied to fabric and allowed to dry in a thin sheet, the resulting rubber has all the properties of the compound from which it has been made. It has tack, so that two surfaces may be joined together as in laying up plies of cloth. The sulphur, accelerators, pigments, and other compounding materials are uniformly distributed so that any portion of the dispersion will show the same cure as the stock itself. The dry film may be subjected to the hot cure when accelerators and sulphurs are present, or, in their absence, the stock may be given an acid or vapor cure as is done in some spread goods.

It has been noted in the literature that to latex there may be added sulphur and pigments in a finely divided state, and a vulcanizable compound thus obtained; one of the principal advantages of the dispersion method over such a procedure is that all of the compounding ingredients are first uniformly mixed on the mixing mill, and while in this condition are dispersed and the dispersion is at least as homogeneous as the stock itself; in fact, in some cases, where there has been uneven or insufficient mixing, the dispersion will actually effect a more uniform mixing of the various components of the compound.

Part of the trouble in applying ordinary cements may be caused by the moisture in the cloth, for it seems to be a well established fact that only when the fabric is dried to what may be termed a "bone-dry" condition do we get the most satisfactory adhesion between cement and fabric. Of course such drying is unnecessary when dispersed rubber is used; in fact, there is even the possibility that the bone-dry condition may not be the best for applying dispersed rubber.

Considerable work has been done in applying these dispersed compounds to commercial work and it is thought worthwhile to mention briefly a few of these uses.

Cements

It is quite obvious that the elimination of volatile inflammable solvents such as benzol and gasoline in the making and using of cements is a consummation devoutly to be wished, whether we look at it from the point of view of saving expense in the elimination of solvents or in the reduction of the fire hazard. To a very large extent we find that wherever rubber cements are used, rubber dispersed in water can take their place. Beyond this broad statement it seems unnecessary to discuss this matter further but reference to a few special cases will be made later on.

[1] Consulting chemist, 68 Bank street, New York, N. Y.

[2] THE INDIA RUBBER WORLD, May 1, 1923, 488-90.

Tires

When rubber is in solution in benzol it is a well-known fact that the rubber is swollen far beyond its normal state and that during the evaporation of the solvent there is a shrinkage of the rubber to its normal size. To a certain extent this must imply a tendency on the part of the rubber to pull away from the fabric. When dispersed rubber dries there is no such tendency, inasmuch as the rubber is not swollen through the action of the water. We are therefore not surprised to find that the dried coating from dispersed rubber adheres more firmly to fabrics than does the coating from cements. Perhaps the explanation of this lies in the fact that when rubber is dispersed as in this process or as it exists in case of latex the water wets the fabric more readily than does an organic solvent and therefore it can more easily carry the rubber into the spaces between the fibers of the cloth.

When applying dispersed rubber to tire fabrics the procedure adopted has been to coat each side with dispersed rubber, using for this purpose the ordinary spreader and then applying a skim coat on the calender. The dispersed rubber takes the place of a friction and is applicable to either square-woven or cord fabric. There is no apparent reason why it is not entirely feasible to run separate cords through a bath of a dispersed rubber compound and, after drying, to run these cords through a creel directly to the calender where the skim coat is applied.

In preparing beads for tire manufacture, they are first given a semi-cure and are then covered with a heavy coating of an adhesive cement. The recovery of the solvent under such circumstances is too expensive to warrant the effort. We find that when a properly prepared compound is used, dispersed rubber dries to a very sticky coating which makes the beads suitable for use in tire building.

The use of dispersed rubber compounds for such purposes as inside tire paint, cores, etc., is too obvious to require more than passing mention.

Inner Tubes

There are two general methods for splicing inner tubes. Perhaps the more common method is to coat both ends of the tube with a pure gum cement and splice these ends together with a cure of sulphur chloride. Depending upon the size of the tube, the overlapping of the ends will vary from two and a half to five inches. The second method is the hot cure, in which a vulcanizing cement is used. The ends are coated with this cement as in the first instance but the overlapping is very much less, say from one to two inches only.

The use of dispersed pure gum for the acid cure is reasonably obvious—the strength of the adhesion, as is the case under the present procedure, is largely a function of the care used in the various steps in a splicing operation such as buffing, drying, etc.

Dispersed rubber is peculiarly well adapted for the hot cure in that it is possible to prepare a cement which will cure in an extremely short space of time. We have found it possible to disperse two compounds: in one we place the sulphur necessary for the reaction and in the other the accelerator. After dispersion, by mixing the two stocks together we obtain a stock which will cure in ten minutes at ten pounds steam pressure and in even a shorter time at higher temperatures. The accelerator used in this case was piperidine piperidyl dithiocarbamate made especially for this process. At thirty pounds steam pressure the time of cure is so short as to afford no possibility of injury to the tube during the splicing operation and we have found that splices made by this process tear through the rubber of the tube rather than that of the cement.

Spreading

In this field there is the greatest latitude for the use of the water dispersion process. In some commercial production on spreading apron stock we have found that the dispersed rubber required fewer coats to give the desired thickness of rubber and that after vulcanization (vapor cure) the product was fully as good if not better than the material made by the regular process. By this method we have eliminated the solvent loss which was undoubtedly one of the biggest items of expense even in such cases where solvent recovery systems are employed. At the same time the fire risk has been eliminated, and this factor alone would justify the use of the process even granting that there was not, as is actually the case, the saving of the cost of the solvent.

Sponge Rubber

The material as it comes from the dispersing mixer is in prime condition for making sponge rubber. By controlling the dilution of the rubber compound and by varying the amount of stock which is placed in the molds we can get sponges with any desired degree of porosity. By using the two-compound method mentioned under the splicing of inner tubes, we can obtain sponges made from stock with such a high percentage of accelerator as to preclude safe handling of such stocks on the mill as a single compound.

Master Batches

Our experience with inner tubes has shown us that there is a great possibility of preparing without the accelerator such stocks as show a dangerous tendency to scorching on the mill, and after the dispersion has been obtained the accelerator may be added in the form of a dispersed master batch. Such dispersions mix readily and the accelerator is uniformly distributed throughout the mass. While we have not had time to exhaust the possibilities of this phase of the situation, it does seem to us at the present moment as though we had been able to eliminate from dispersed rubber the question of burning or scorching. Ordinarily we would not need and certainly would not want to make two batches, preferring, as under the present conditions, to make up a stock in a single batch, but where such a procedure is difficult or impossible, the use of master batches of accelerators in the dispersed form is feasible, economical, and does not unduly add to the routine of the factory.

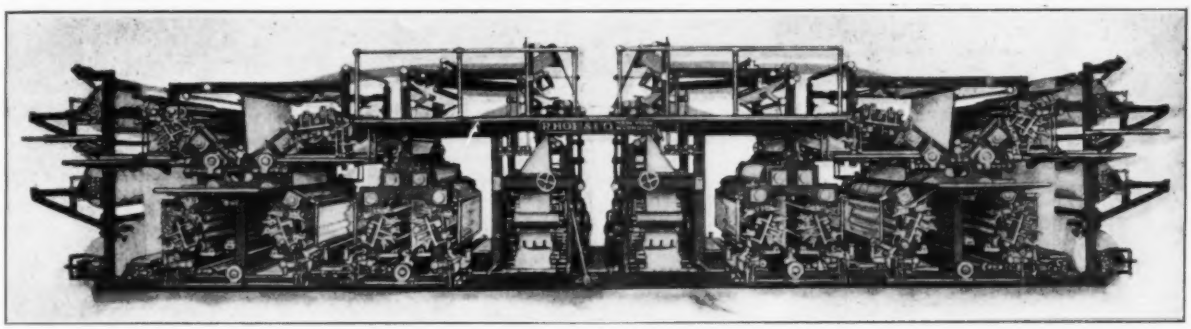
There is one point in this connection which may prove to be of more than passing interest. We find that water soluble accelerators seem to be more evenly distributed and give a more uniform cure than in the same stock mixed in the usual way. The subject seems to offer attractive possibilities and we would prefer waiting for the results of some fairly extensive tests now being made before making any more definite statements regarding these water soluble accelerators.

Conclusion

The above are only the obvious applications of the use of dispersed rubber. Lack of space precludes our going into this matter more thoroughly. All we hope to do in this article is to report that the dispersion process has been carried to the point where it is now possible to obtain dispersions of crude rubber and of practically all kinds of rubber compounds without the use of any organic solvent whatever; to show to some extent how this material may be used in the rubber industry; to emphasize that the process requires only the simplest type of enclosed mixing equipment likely to be found in any rubber factory; and to remark that the time required for the entire operation has been reduced to about half an hour.

CREDIT MEN ENDORSE MELLON PLAN

The plan recently proposed by the Secretary of the Treasury for the reduction of taxes has been heartily endorsed in a statement published by the National Association of Credit Men. Members of this organization represented on the foreign credit executive committee include Ernst B. Filsinger, of Lawrence & Co., New York, N. Y.; Edward E. Huber, of the Eberhard Faber Rubber Co., Brooklyn, New York; and William L. Proctor, of the United States Rubber Export Co., Limited, New York, N. Y.



Double Sextuple Web Printing Press

Rubber Printers' Rollers

Failures and Losses by Use of Composition Rolls in News Presses Lead to Development of Rubber Inking Rollers as Substitute—Notable Success of Rubber Rolls Under Conditions of Heat, Humidity and Speed—Development of Rolls for Web Presses Now in Progress

THE printing industry, especially that division devoted to newspaper printing, is greatly in need of more reliable inking rollers than those of the composition now in common use. Here is a field for profitable development by manufacturers of mechanical rubber goods. Already progress has been made and success attained with rubber rollers for color presses and off-set lithography; not yet, however, have they fulfilled the service conditions of the inking system on a web perfecting press. The need of rubber rollers is urgent in the press rooms of large newspapers to eliminate the excessive expense and the unreliability of standard composition rollers.

Composition Ink Rollers

Printers' roll composition is made chiefly of glue, glycerine and water. The proportions are varied for summer and winter use. Glue rolls are resilient and easily cast and withstand the action of the mineral oils and linseed varnish contained in printing ink, and also the solvents employed for washing the rolls free of ink.

Composition rolls are cast on steel shafts centered in polished cylindrical molds from which they are removed with glasslike smooth surface and appropriate degree of softness and resilience.

Certain glue compositions gain in working quality, at the expense of not being recastable, by the addition of chemical ingredients. The seasonal differences of temperature and relative humidity require manufacturers of roll composition to prepare distinctive grades for summer and winter use to meet extremes of press room conditions. This means extra roll equipment and consequently extra expense for the printer.

Damaged Composition Ink Rollers

Susceptibility to influences of heat and moisture is the principal cause for the unreliability of composition ink rollers in a newspaper press room, where failure usually means excessive loss.

An actual example showing the failure of a group of composition rollers from the presses of a great city newspaper is shown herewith. It will be noted that these rollers have become twisted and melted masses of composition on the roller shafts. When such a roll failure occurs in the rush of printing a news edition at the rate of 28,000 to 30,000 copies an hour the loss occasioned is enormous. To forestall such occurrences the publishers of a great system of American newspapers have undertaken the displacement of composition ink rolls on their presses by rubber rollers, and are meeting with encouraging results although the problem is not yet wholly solved.

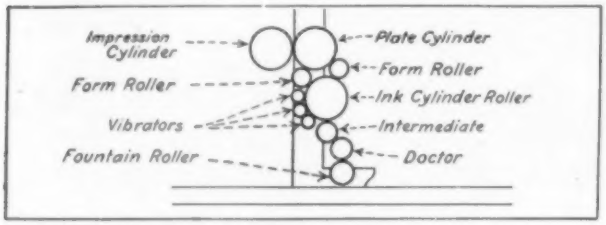
Ink and Typical Inking Systems

Black and colored inks for newspaper work consist of gas black or colored pigments ground in linseed oil varnish reduced to a free fluid consistency by the addition of light gravity petroleum. Free flowing consistency is needed to supply the ink rapidly by the ink distributing system. The function of the latter is to carry the ink from the fount and distribute it very evenly and steadily upon the plate roll as required for clear impressions.

A web perfecting press for newspaper printing is shown in the illustration. The relative arrangement of the rollers in an inking system unit of such a press is also shown in the accompanying diagram. A very similar arrangement of rollers is employed in the color cylinder press. In each style of press seven composition or rubber rollers are required in each inking unit. Each unit comprises form rollers, vibrators, intermediate roller and "doctor." The latter receives the ink supply from the steel roller running in the ink fountain.

Ink Roll Dimensions

For newspaper work inking rollers are 70 inches face, mounted on spindles 2½ inches in diameter. The outside diameters of the



Web Press Inking Roll Unit

rolls vary from 4⅝ inches to six inches. A 12-cylinder press or a double sextuple web press requires 12 units of seven rolls each or 84 in the complete equipment.

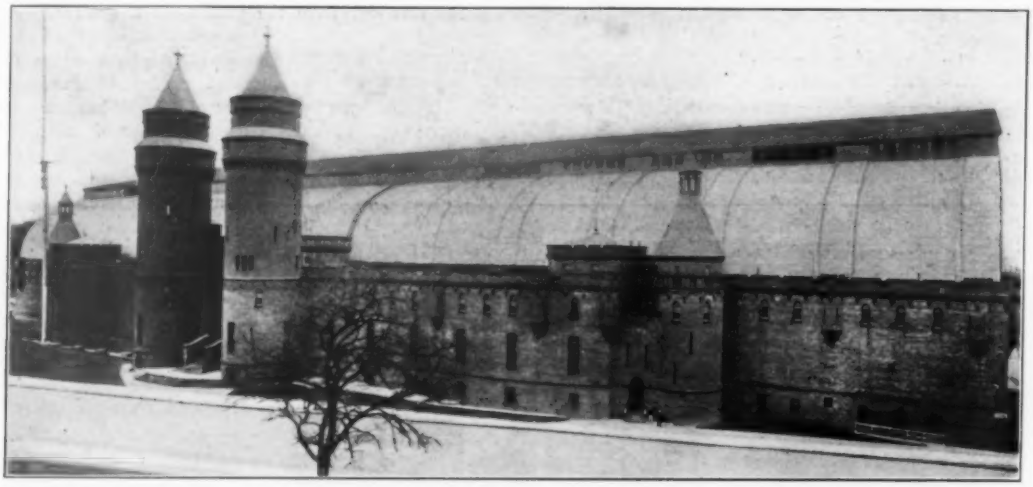
The Rubber Roll Problem

The factors that enter the problem of rubber for ink rolls include: (1) resistance of the roll stock to swelling and softening influence of oil; (2) permanent softness and resiliency in correct degree; (3) proper vulcanization and aging quality to meet press operating conditions of heat, and high relative humidity without causes a rebounding action and quick destruction of the roll next the plate roll.

There exists no insuperable difficulty in compounding rubber to withstand this oily ink or the kerosene and other solvents used to clean the rollers. The longer service of rubber rollers and the fact that the same set will give satisfaction through summer and winter conditions makes these rolls very economical. Ultimately, satisfactory rubber rolls for the web press will be perfected. The demand for reliable rubber inking rolls is sufficiently large to warrant the study and expense required to perfect them as standard equipment, particularly for large presses.

THE NEW YORK AUTOMOBILE SHOW

The coming twenty-fourth National Automobile Show to be held January 5 to 12, 1924, at the 258th Field Artillery Armory, the Bronx, New York, N. Y., will, it is said, represent the largest exhibition devoted to a single industry ever held in any country. As the show is to be housed in the biggest armory in the world, plans on the most extended scale for the decoration of the building are being carried out, and arrangements are being made to accommodate a large number of visitors. Practically all makes of cars already entered will be displayed on the main floor of the drill hall, which represents the biggest auditorium without pillars in the world. Nearly 350 exhibitors of complete cars and accessories are already listed, and as usual many innovations in



The 258th Field Artillery Armory, the Bronx, New York, N. Y., Where the National Automobile Show Will Be Held

mechanism and body equipment will be shown. Every effort is being made to make the coming show a successful one.

gathering the floating dust of paper fiber on the roller surface, and thus necessitating stopping for roller washing; (4) smoothness of surface without glazing; (5) accuracy of dimensions, and ability to be trued by regrinding.

All of these points are important from the pressman's standpoint and do not include those that arise in the development work by the rubber manufacturer.

Successful Applications

Development of the rubber inking roller for newspaper work began with the cylinder presses for black and colored printing of magazine and comic sections of Sunday papers. These presses print flat sheets at 18,000 an hour. The success of rubber rolls on such work is shown by the fact that the same sets of rolls have been in continuous service on cylinder presses for over three years and are reported as still in excellent condition.

Rubber ink rolls on the web press have failed so far, due to the high speed of the press, which turns off 25,000 to 30,000 impressions per hour from continuous rolls of paper. Too great resilience or deviation from trueness in roll face or roll diameter

NATIONAL TIRE DEALERS' ASSOCIATION ELECTS OFFICERS

Officers chosen for the year 1924 by the National Tire Dealers' Association at its recent convention in New York City include the following: George J. Burger, president (re-elected); and Thomas F. Whitehead, vice president. The directors, in addition to the executives mentioned, are: E. P. Farley, Clay D. Manville, Nathaniel W. Howell, H. A. Rhunke, and P. J. Quigley.

SPRING MEETING OF THE AMERICAN CHEMICAL SOCIETY

The Spring Meeting of the American Chemical Society will be held at Washington during the week of April 21, 1924. The Rubber Division will provide a program of papers of special interest and importance.

Manufacture of Four-Buckle Gaiters

Raw Materials—Stock Preparation—Calendering—Building the Gaiter—Varnishing, Curing and Inspecting

MUCH of the growth of the rubber footwear business since the war has been due to the increased demand for the four-buckle gaiter or overshoe, especially in the women's, misses', and children's sizes. In fact many of the plants have quadrupled their capacity to manufacture this type of shoe. The reason for this has been the growing custom of wearing low cut shoes the year round, whereas formerly high boots and rubbers were worn, while now low shoes and overshoes are the rule.

In increasing their production capacity, manufacturers have paid particular attention to the quality of the article as the added wear given overshoes today has made it necessary to make the product better than ever. This betterment of quality starts with the raw materials used, which may be enumerated as follows:

Building Women's Four-Buckle Overshoes

Raw Materials

RUBBER: Smoked sheet used as the base for outsoles, uppers, and all compounds; cheaper and softer grades, such as roll brown, may be used in lining coatings and frictions.

RECLAIM: Used in outsoles to increase wearing qualities and prevent shrinkage, and in rag compounds as the base for heel pieces, etc.

LITHARGE: Used in all compounds to speed up vulcanization.

WHITING: The most widely used filler in footwear.

SULPHUR: Vulcanizer for all compounds.

CARBON BLACK: Imparts toughness to compound, makes dry, tough, raw stock.

PINE TAR: Softener. Helps vulcanization softly.

LINSEED OIL: Used in varnishes.

LAMPBLACK: Gives deep, black compound, but imparts no strength.

GILSONITE: Footwear varnishes.

RESIN: Friction stock and cement.

The following fabrics are used in the manufacture of women's four-buckle gaiters:

JERSEY CLOTH: A knitted woolen product, knit on 18-inch head, slit and dyed black. Used as outside covering for all light gaiters.

CASHMERETTE: A woven woolen product, woven on 54-inch looms, and dyed black. Used as outside covering for all heavy cloth gaiters.

BLACK FLEECE-6-OUNCE: A knitted woolen product, containing about 30 per cent wool, the balance cotton, napped on one side and dyed black. Used as lining for gaiters.

SHEETINGS: 2.85 and 5.00 yard weights commonly used. Some frictioned in the gray to make inside reinforcing pieces, others dyed black for insole and pocket.

Included in miscellaneous materials used in gaiter manufacture are: hooks and ladders, twine or cord, cartons, cases, etc.

Stock Preparation

The first steps in preparation of these raw materials are drying the fabrics and mixing the compounds. The compounds necessary are five in number, as follows: upper, soling, lining coating, friction, and rag. After the compounds are mixed and hung on racks to cool, and the fabrics wound over the driers and placed in a kiln to keep out the moisture, the scene of production department passes to the calender department.

Calendering

The types of calenders used and the stocks run on them may be summarized as follows:

Three-roll 60-inch lining calender with even motion is used for coating jersey, cashmerette, fleece, and black sheeting for pocket stock. In coating jersey, special attention must be paid to the heat of the rolls so as not to strike the gum through the cloth and yet apply it with sufficient adhesion to prevent peeling. Care must also be taken not to get the compound too soft, as this will cause the cloth to stick on the rolls, and the resulting tension to remove it will stretch and strain it too much. Fleece is usually "bricked" at the calender, a process of applying an even, light coat of talc to prevent the napped side from pulling off. It is also wound in a liner.

Three-roll rag calender is used for running insole, filling soling, and heel piece stock. These compounds contain very little rubber, a good percentage of reclaimed, and the balance uncured friction, net, rag, and miscellaneous mill scrap. The secret of running "rag" stock successfully is to have it well mixed and thoroughly refined before calendering.

Insoling consists of a very light sheeting, usually about 5.00 yard coated with rag; filling sole consists of rag run plain to a heavy gage; and heel piece stock is run to a lighter gage. The plain rag stocks are wound in liners, this being unnecessary in the case of the insoling as the cloth back allows it to be unwound easily.

Three-roll friction calender is used for frictioning 2.85 and 5.00 yard sheeting in the gray for various reinforcing parts of the gaiter. It is frictioned on both sides, one side at a time, and wound in a liner. Compound must be well worked and soft in order to strike into cloth properly.

Upper and soling calenders are equipped with interchangeable rolls to run different trade marks and sole and upper designs. Upper work for gaiters is run on the plain roll for inner vamp, heel and toe foxing. Various corrugated designs are used on soling with the firm's name embossed in the shank or ball. The upper stock must be absolutely free from harsh particles and run comparatively soft. Soling must be milled enough to be pliable and to prevent shrinkage.

Cutting Parts of Gaiters

The stocks are then forwarded to the cutting department in rolls, drums, or on frames for cutting out the parts. There are twenty-four parts in the standard construction of the four-buckle gaiter, as follows: outsole; heel and toe foxing, gum inner vamp, known as the gum work; quarter; vamp; gusset; pocket; leg lining; toe lining; insole; rag filler; friction form sole; cloth heel; strips, 1½-inch and ⅝-inch; rag heel; vamp cord; buckle straps; friction back stay; friction quarter stay; hooks and ladders, known as the inside work.

Outsoles are cut out by machine, one at a time with a beveled edge. The operator centers the trade mark under the pattern and operates the machine with a foot pedal which throws in the knife propelling clutch. The soles are then booked and sent direct to the making department. The heel and toe foxing, and gum inner vamps are cut out of plain sheet by mallet and die on a wet block to prevent sticking. These are also booked and sent direct to the maker.

The inside work parts are cut out on beam "dinkers" or Parsons presses, and clicking machines. The stock first must be plied up from 15 to 30 thicknesses, which operation is done either on a doubling drum or by hand on a flat table. Separator paper is used between friction and rag stocks to prevent the parts sticking together after cutting. Jersey cloth must be stored at least eight days before cutting on a flat table to allow it to shrink back, otherwise a "crawl" will develop after cutting and the parts will shrink from their original shape. This treatment is not necessary for cashmerette, which can be calendered, doubled, and cut in the same day if necessary.

After the parts are cut, they must be "picked," counted into sets, the bad pieces thrown out, and sent along to the quarter and making departments.

Making the Quarter

The "quarter" is the name given to the completed top or cloth part of the shoe. The first operation in making this part after cutting is performed by female workers known as quarter makers. The work is equally as skillful as that of making the shoe, consequently experienced girls are needed.

First the quarters, vamps, and pockets are laid out and given a light coat of cement. Vamp cord, used to reinforce the top of the shoe, is medium-weight twine rolled together with bias friction strip; it is made in spools on a specially constructed machine for that purpose. Similarly, buckle strap is bias friction strip, automatically folded, cemented, and cut to length.

The gusset is edged with piping strip and inserted in the vamp, the top edge of which is lined with vamp cord. Next the friction quarter stay, a long strip which serves as a reinforcing for the buckle straps, is placed in position on the quarter with the aid of a tin gage. The placing of the buckles and hooks follows this operation, and when a strip of vamp cord has been put on the top edge of the quarter the pockets are ready to be inserted.

Taking the pocket, the maker folds it in the center, gages the upper edge so that it will be even with the top of the quarter—the point of the vamp to be on line with the corner of the pocket—and places it in position. The other pocket is then inserted in a like manner and the vamp is fitted, the edge of which must be rolled over the buckle straps very carefully. The quarter is then complete and is placed on a cardboard form to be sent to the shoemaker.

Building the Gaiter

Before starting to build the shoe, the maker must cement and join the leg and toe linings. The lining is drawn or "hooded" over the last, the toe inserted and lasted over to the insole. The following parts are then placed on in order: gum inner vamp, rag filling sole, toe piping, back stay, and cloth heel. The shoe is now ready for the quarter, which is slid over the last into position, first smoothing out the toe so that the edge comes even with the line of the friction toe strip. Next the gusset is centered and the fullness pushed back on either side to make a pocket. With the aid of a hand roller all parts are rolled firmly together. This rolling is very important as the life of the shoe depends upon how long the parts will hold together. Then the buckles are hooked up and the friction form sole is placed on and rolled.

Our shoe is now complete except for the gum work, the toe foxing going on first, then the heel foxing, both of which are sealed securely by two stitchings with a serrated roller. These lines made by the stitcher add a great deal to the appearance of the shoe and must be made with care.

The outsoles are cemented, allowed to dry, and placed on the shoes carefully, being pressed on by machines, of which there are various types.

Varnishing, Curing and Inspecting

The shoes are then loaded on cars and sent to the vulcanizers, where first they are given a coat of varnish to give them a shiny appearance on the rubber parts. After vulcanization, which lasts from three to seven hours according to the type of curing apparatus used, the shoes are sent to the packing department, where the wooden lasts are removed or "stripped," the shoes trimmed, and laid out for inspection. Here they are graded into firsts, seconds, or thirds, and packed for shipment.

Common faults which cause the shoes to be classed as seconds are as follows: (1) Compound troubles—blistering of foxing or soles, shipping or pulling away of sole from foxing; (2) vulcanization—over or under curing; (3) making troubles—wrinkles in uppers, faulty alinement, tops put on crooked, poor stitching of soles; (4) handling damage—shoes stuck together or bruised by dropping from cars, or cut shoes from carelessness in trimming; (5) construction—wrong materials used.

Rubber Shock Insulators on Taxicabs and Motor Cars[1]

Prospective Business—Advantages in Use—Attachment of Insulators—Further Applications

Volume of Prospective Business

WITH some 12,000,000 passenger automobiles now in operation in the United States and production of new cars going on at the rate of about 3,000,000 annually, an enormous field for rubber shock insulators exists for spring suspensions alone, not to mention the other applications in which further developments are to be expected. As the eight rubber blocks required for the spring suspension of each car comprise an aggregate average weight of 13½ pounds, it would require 40,500,000 pounds, or 20,250 tons, of compounded solid rubber, to equip a single year's passenger car output at the present rate of production. As the compound contains about 50 per cent by weight of crude rubber, over 9,000 long tons would be needed, or an amount somewhat greater than the total Canadian consumption for all purposes. To equip the 12,000,000 passenger cars now in use would require 162,000,000 pounds, or 81,000 tons, of compounded solid rubber and over 36,000 long tons of crude.

Efficiency of Rubber Insulators

Rubber shock insulators were developed as a simple means of combining riding comfort in large passenger buses under all ordinary road conditions with the economy and dependability of solid tire equipment. Their efficiency for this purpose has already been chronicled in THE INDIA RUBBER WORLD[2], but their more recent application to pneumatic tired taxicabs and motor cars has produced such superlative riding comfort that cars so equipped may be literally described as "floating" on eight blocks of live rubber without a tremor. Moreover, the means to this much desired end is so simple that it may revolutionize spring suspension original equipment.

A popular taxicab and a high-grade motor are now equipped with rubber shock insulators at both ends of all springs instead of the conventional pin type shackles. This list of motor vehicle makers to adopt them promises to grow, as the companies manufacturing the cars referred to have made rubber shock insulators regular equipment only after long and thorough tests which have demonstrated their numerous superiorities for safer, more comfortable, economical and profitable motor vehicle operation.

Advantages of Rubber Shackles

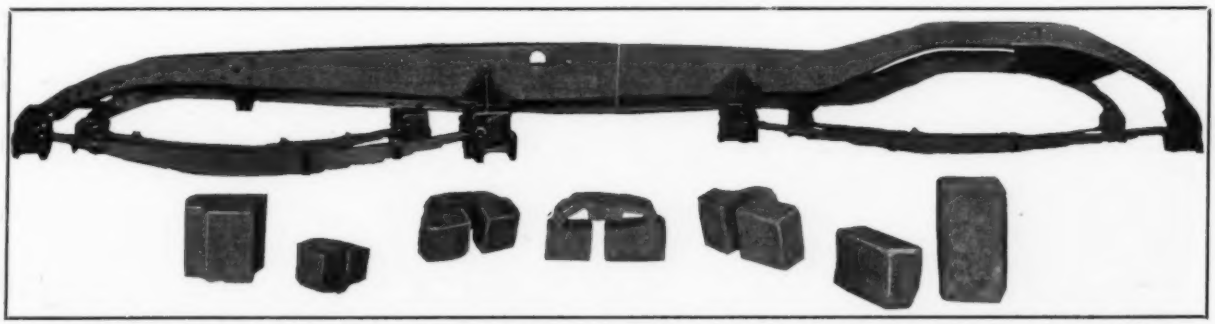
Rubber shock insulators are rubber spring shackles replacing the usual metal shackles and spring bolt construction. The ends of the springs are imbedded in rubber blocks held under pressure in housings which are attached to the frame. There is no friction between surfaces and consequently no wear, looseness nor rattle. The rubber tends to compensate for the twisting action between the spring and the frame. Side and end thrust are taken up without metal-to-metal contact.

Crystallization of the frame, steering gear parts and other members due to vibration transmitted by ordinary shackles, is eliminated. The tendency of nuts and rivets to loosen is also decreased.

A 50 per cent saving in tire mileage is expected because the rubber blocks absorb shocks and cushion jars and jolts. Reduced gasoline consumption is effected because a car can be operated at a more uniform speed.

Rubber shock insulators ordinarily require no attention during the life of a car. Should replacement become necessary, however, eight simple blocks of rubber can be installed in a short time, while the cost is comparable to that of ordinary steel spring shackle replacement.

These shock insulators not only do away with the steel shackles, shackle bolts, nuts, spring eyes, bushings and hardened and ground steel shackle pins, but make lubrication unnecessary. Grease cups, grease and oil are no longer required. Spring construction is simplified since no wrapped eye is necessary.



Dodge Chassis Equipped with Rubber Shock Insulators. Insert—Rubber Shackles for Front and Rear Spring Mounting

Rubber shock insulators constitute the most radical recent improvement in motor vehicle transportation and the biggest stride toward a "driver-proof" taxicab. With them cab patrons can ride over the roughest streets without leaving the cushions, and liability of injury to passengers is practically eliminated. There is no noise, no heaving, rolling, slipping or side sway of the car, and no spine-racking of the passenger.

Applying Shock Insulators to Existing Cars

While rubber shock insulators will come into use for the most part as original equipment on new cars they can be applied to existing cars by removing the old springs and spring brackets and replacing with the special spring brackets and springs required. To do this it is necessary to remove fenders and running boards, but not the body. Removal of one rear spring at a time facilitates assembling. Both front springs can be removed at the same time. The heads of the old spring bracket rivets are drilled and chiseled off, leaving clean holes. The new insulator brackets are then clamped to the frame, drilled with the frame holes as a template, and riveted to the frame. The rubber insulator blocks are then coated with soapstone or a thick soap solution and the spring put in place according to detailed directions fur-

[1] Written from data furnished by the Rubber Shock Insulator Co., Inc., New York, N. Y.; the Yellow Cab Manufacturing Co., Chicago, Illinois; and the Sterling-Knight Co., Warren, Ohio.

[2] "Rubber Shock Insulators for Buses," THE INDIA RUBBER WORLD, November 1, 1921, 115-6.

nished. In certain cases new and longer brake cross shaft levers are also necessary, but the assembly remains the same.

Further Applications of Rubber Insulators

Rubber shock insulators have been successfully applied in several other locations on motor vehicles, notably in torque rods and motor hangings. The new Mack low bus chassis, weighing 3,750 pounds, total weight with body 9,480 pounds, not only has pneumatic tires but it is equipped with rubber shock insulators at the ends of all springs. A front bumper of hinged type is also supported on rubber goose-necks or shock insulators. The builders of the Mack truck have proved the success of shock insulators for the spring suspension on the heaviest type of vehicles. Fifty thousand miles of constant use on a 5-ton truck have failed to show any appreciable wear on the rubber blocks.

De Mattia Bros., Builders of Special Rubber Machinery

During 1909, Peter De Mattia and Barthold De Mattia formed a partnership and started a machine shop in Garfield, New Jersey. Several small machine tools were installed in a leased building and a general jobbing business was conducted, the principal line of manufacture being revolution counters. Later a tool and die department was added and hardened steel dies were developed for the manufacture of insulating materials.

Factory facilities were gradually increased and various classes of machinery, including shade roller machines, match machinery, textile machinery and photogravure presses were built. In the meantime rapid development was made in the tool and die department in the manufacture of molds for mechanical rubber goods and solid and pneumatic tires, and starting in 1913 this department was devoted almost exclusively to this line.

In 1916 the partnership was changed to a corporation and during the following year a manufacturing site was acquired on the main line of the Erie Railroad in Clifton and about two miles from the machine shop in Garfield, New Jersey. A modern foundry with a capacity of 20 tons daily was built during the same year.

Many patents have been taken out by the firm, the best known covering the various types of De Mattia core chucks. Molds for pneumatic as well as solid tires form a greater part of the production. Several special machine tools have been designed and built in the De Mattia shops for use in the manufacture of these products. Other lines of manufacture of interest to the tire trade are power stands, tire stands, heater connections and time saving devices for use in the building and curing of tires.

The office, engineering, pattern and blacksmith departments are maintained at the machine shops in Garfield, while a machine department for chucks only is located with the foundry in Clifton.

A Corner in the Machine Shop of De Mattia Bros., Garfield, New Jersey

RUBBER SEAL RINGS FOR WATER TURBINES

Where high speed, large capacity hydraulic turbines have been installed there is often difficulty met with from water leakage around the turbine runner, the water sometimes containing silt or other abrasive particles. A manufacturer on a large scale of hydraulic turbines has been recently experimenting with rubber seal rings, his studies being directed toward finding such a design and construction which would avoid (1) leakage between stationary and rotating parts, (2) wear between parts, (3) danger of seizure between rotating and stationary parts, or danger that a shutdown might be caused by the assembly of the turbine runner slightly out of the exact center, or even having a slight eccentric movement on account of the necessary clearance within the main steady bearings.

After encouraging results with rubber seal rings, experiments were made to determine the best quality, thickness and hardness for them. Rings now being made embodying the results of these trials are of a thickness that leaves no free clearance between the moving and stationary parts, and the hardness used is about that of a good automobile tire casing. Under these conditions it is asserted there is absolutely no danger of seizure, no leakage, and the wear after almost a year's operation under adverse conditions has been negligible. The danger of damage to the interior of the turbine from the rubbing of steel rings between the rotating and stationary seal ring surfaces, is entirely eliminated.

At one of the power houses of the Southern California Edison Company the installation of rubber seal rings has enabled the plant to develop more power under the same hydraulic conditions than ever before and with better operating characteristics. Credit for the success of such experiments is due Ely C. Hutchinson, general manager and chief engineer of the Pelton Water Wheel Company, and to four cooperating engineers connected with the Southern California Edison Co. and the Southern Sierras Power Co.

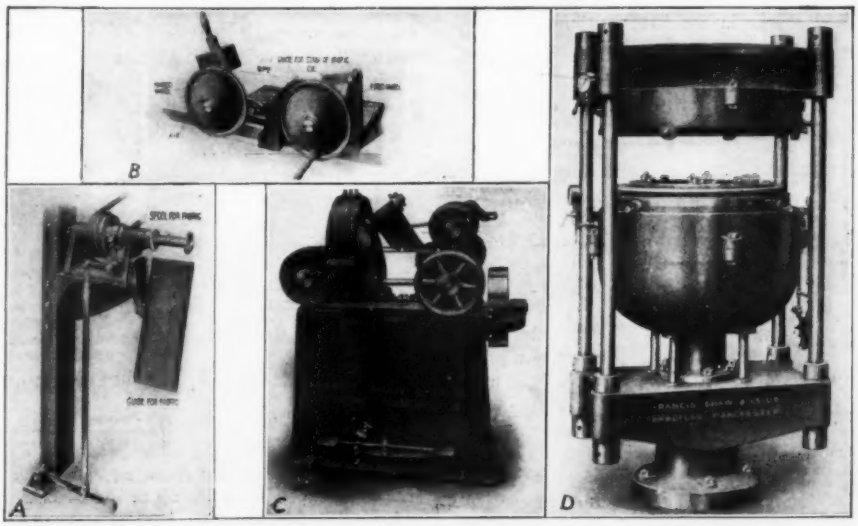
QUEBEC AND ONTARIO, LEADING OTHER COUNTRIES LAST YEAR IN importations, valued at $815,288, of United States miscellaneous rubber goods, have thus far taken during the first eight months of 1923 importations of such goods valued at $662,708. An even greater advance, however, has been made by England, taking during the eight months period of 1923 a total of $497,962, as compared with that of the entire year of 1922, or $550,079.

Manufacture of Cycle Tires

The Healey-Shaw Process—Fabric Slitting—Wire Covering—Spool Wrapping—Foundation Building—Vulcanizing

ALTHOUGH it is many years since the passing of bicycling as a popular sport or diversion, the annual output of bicycles still totals a large number with corresponding demand for tires. One of the most successful methods of cycle tire building is the English one known as the Healey-Shaw process, the principal features of which are simplicity and economy, with elimination of all hand work except covering the wired canvas tire foundation with rubber. The method is designed for fabric tires only of the detachable type, but as the great majority of cycle tires are made of fabric its application is almost universal.

A unit plant capable of turning out 1,200 tires per week of five-hour days consists of the following machines: one slitting machine, one wire covering machine, one spool wrapping machine, one foundation building machine and five vulcanizing presses. If the presses are worked two or three eight-hour shifts per day, which is advisable, the number required will be reduced to three or two respectively.



Francis Shaw & Co., Limited.

(A) SPOOL WRAPPER. (B) BEAD WIRE COVERING MACHINE. (C) FOUNDATION BUILDING MACHINE. (D) VULCANIZING PRESS.

Slitting the Fabric

The building fabric is frictioned and handled in the usual manner. It is slit into the exact widths required and rolled on bobbins in a specially designed fabric slitting machine. This is of vertical type with a batch roller and two sets of taking-up bobbins.

In operation the roll of fabric is placed in the machine, one end marked with the widths required and cut by hand for a length of about two yards. The loose ends are then attached to the bobbins, the odd number of strips on one line of bobbins and the even number of strips on the other line. The fabric is carried over the necessary guide rollers and slitting devices, the take-up rollers are driven by belting, and the strips are wound evenly on the bobbins ready for the building operation.

The machine will produce about 3,000 yards of wound strip per hour. In the make-up room the fabric is unrolled and cut on a zinc covered table to exact length, with beveled ends and marked for the various tire sizes.

Spool Wrapper

After cutting to length the fabric strip is wound on the spool of the building machine by a simple machine shown in the illustration at *A*. This machine is made to be bolted to post or table. It comprises a spindle in two parts, one driven by a belt from a counter shaft and the other serving to mount the spool for the fabric. These are clutch connected, the winding being under pedal control by the operator.

Bead Wire Covering Machine

The tire bead wires are made endless and are covered in the hand operated machine illustrated at *B*. This machine consists of two grooved disks, one fixed and the other attached to a hinged bracket to enable the wire band to be placed on and taken off the machine. The movable disk is fitted with a lever carrying balance weights to give tension to the wire. A narrow strip of frictioned fabric is fed through a guide and wrapped about the wire by means of a die as it moves around the disks. The machine is hand operated and is capable of covering 75 wires an hour.

Foundation Building Machine

The tire foundation consists of two crossed strips of fabric wound on the bias around two bead wires which form the edges of the flattened foundation band. The machine on which the tire foundations are built up is represented at *C*. Two grooved rollers are provided to take the wires, one fixed and the other adjustable. These are driven to give the correct travel to the wires. The spool of fabric is carried on a revolving disk running at the correct speed to wrap the fabric evenly around the pair of wires, edge to edge without gap or overlap. By this means the tire foundation is built in two layers of fabric wrapped on the bias and crossed. No reinforcement is required at the edges and no stitching is necessary. The output of the machine is 300 covers in eight hours.

The fabric foundation is next covered with sidewall and tread rubber by hand in the usual manner. These stocks are cut to proper strip widths on the calender as run to save waste.

Vulcanizing Press

The flat band tires are brought to shape, pressed and vulcanized in a press of the type shown at *D*. This hydraulic press is operated by two rams, one for closing the tire mold and the other for expanding the core. The special advantage of the double hydraulic system is that expanding the mold is independent of the closing of the mold. This feature allows examination of the shaping of the tire before the mold is closed for vulcanization and thus avoids spoilage of tires.

Tire Mold

The tire mold consists of two side rings, a tread ring, and a collapsible core in eight segments. The side rings are removably mounted to the upper and lower parts of the press. The tread pattern is turned or engraved in the tread ring, which can readily be changed to permit the mold to be used for various designs of tires. The core and side rings are common to all tires of their particular size.

The curing time varies from five to eight minutes, allowing an average output of six tires an hour.

PERCENTAGE OF MATERIALS IN A TIRE

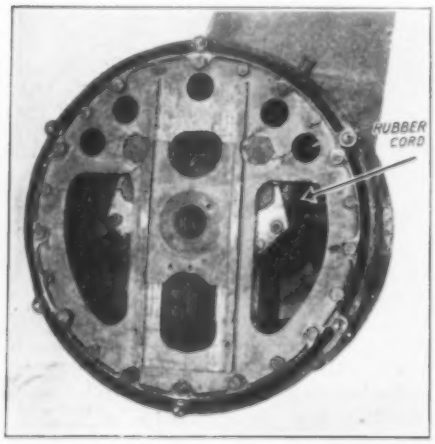
The percentages of rubber compound, cords and wire used in the manufacture of an automobile tire are practically the same for all casings, although the quantities, as measured in pounds, naturally vary with the different tire sizes.

In standard makes of tires, approximately 78 per cent of rubber is found; 16 per cent of cords and other fabrics, such as breaker strips, flipper strips, etc.; and 6 per cent of bead wire. In a 32 by 4 standard make cord, for example, there are approximately 18 pounds of rubber compound, 3.75 pounds of cords, and 1.60 pounds of steel wires in the beads, making the total weight slightly over 23 pounds.

It is interesting to note also the amount of cords required for the construction of a 32 by 4 cord tire. If all of them were strung out, end to end, they would cover a distance of 140,400 inches, which is about two and one-fifth miles.—*Miller News Service.*

CURTISS PLANE USES NEW RUBBER SHOCK ABSORBER

A new type of shock absorber wheel is being used for the Navy Curtiss Racer, as manufactured by the Curtiss Aeroplane & Motor Co., Inc., Garden City, Long Island, New York.



Curtiss Landing Gear Wheel Hub

The orthodox method is to mount a short shaft, upon which the wheel is set, to a fixed axle on the undercarriage and to secure the shaft by rubber cords. This has proved satisfactory, but the spools of rubber cord offer appreciable parasitic resistance at high speed, which the new Curtiss internal shock absorbing wheel eliminates. The wheel proper consists of a rim with short spokes connected to a roller bearing hub having a diameter of approximately 12 inches. The hub, which is held to the central axle or spreader of the undercarriage by rubber cords, is retained on the axle by a large flat headed bolt threaded into the shaft. The cushioning effect of the tires is supplemented by stretching of the rubber bands within the wheel itself, enabling the machine to land safely at high speed on rough ground. The arrangement helps to give the whole wheel a better streamline effect and eliminates the drag set up by the usual device. Wheels and tires are completely covered with fabric.—*Automotive Industries.*

United States Tire Exports to South America

South America imported during the year 1923 approximately 500,000 automobile casings, the sources being the United States, France, Germany, Canada, Great Britain, Italy, and Belgium. Of this trade the United States secured about 45 per cent, while from the accompanying table it will be seen that in some of the countries under consideration her leadership is evidently firmly established.

While the exports from the United States to South America are heavier this year than in 1922, they represent a somewhat

Commerce Reports.

Tire Trade in South America

smaller share of the total trade, owing partly to the fact that some American firms ship tires to Brazil, Uruguay, and Argentina from their Canadian factories, and partly to the increasingly keen competition from European manufacturers.

According to *Commerce Reports* the estimated consumption of automobile casings in 1923 is as follows:

Countries	Number of Casings	Percentage Supplied by United States	Countries	Number of Casings	Percentage Supplied by United States
Argentina	285,000	42	Colombia	9,000	90
Paraguay	1,000	70	Venezuela	11,500	95
Uruguay	42,000	43	British Guiana	3,000	25
Brazil	100,000	35	Dutch Guiana	400	80
Chile	26,000	50	French Guiana	300	10
Bolivia	1,500	70			
Ecuador	2,000	80	Total	497,700	..
Peru	16,000	80			

FIRESTONE UNIVERSITY SCHOLARSHIP AWARDED

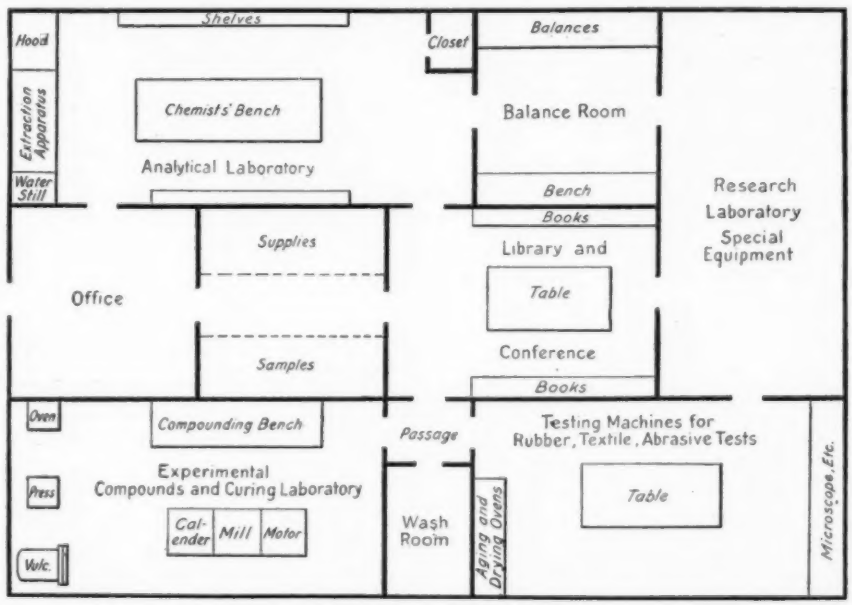
The Highway Education Board, Washington, D. C., announces that Dorothy L. Roberts, of Harlan, Kentucky, has been the winner of the H. S. Firestone University Scholarship, offered for the best essay entered in the fourth annual good roads essay contest. More than 150,000 high school students competed for this prize by writing upon the subject, "The Influence of Highway Transport upon the Religious Life of My Community." The subject of the 1924 essays will be, "The Relation of Highways to Home Life." Those desiring information regarding the contest should address the Highway Education Board, Willard Building, Washington, D. C.

The Rubber Works Laboratory

Essential Considerations—Scope of the Laboratory—Ideal Layout—Executive Support—Information Resources—Consulting Assistance

MODERN factory organizations are incomplete unless they include a laboratory department as an essential factor for control and development of materials, processes and product. The question of organizing a laboratory department, therefore, merits careful consideration on the part of the management of every rubber company. This question is sometimes decided by inexperienced managers of new and small companies solely on the narrow basis of initial cost, with little consideration of compensating advantages.

A laboratory is virtually an investment insuring technical progress in marked degree to the organization adequately maintaining it. Profit is the ultimate justification for every department in the plant, including the laboratory. The latter, however, is not primarily a profit making department but rather a money saving one and a factor in technical progress. The value of these features unquestionably exceeds those of equipment cost and maintenance. Should they fail of full consideration great injustice amounting to serious handicapping of the business may result, in one or other of the following directions: (1) there may be no laboratory where there should be one; (2) a laboratory may be established disproportionately large or small with reference to plant needs and support.



Comprehensive Departmental Rubber Laboratory

Laboratory Scope

A laboratory may profitably be started in a very small way as an analytical and physical testing unit growing with the increase of plant production to comprise a series of departments functioning under a single head somewhat as follows:

(1) Analytic and testing, confined to control work on materials and processes by analysis and physical tests. (2) Experimental, covering compounding, curing, the technology of materials, and processes, specifications and standardization of the quality of goods to insure their yielding consistent service and profit. (3) Research on special lines of development and study of technical problems lying in advance of current manufacturing practice.

To these has sometimes been added the development and commercial preparation of special products, although manufacturing activities are scarcely within the province of a rubber works laboratory.

In new rubber companies a laboratory organization, reduced to its lowest terms of one man with analytical and testing equipment, should be a part of the factory organization. In old established companies the laboratory is needed as a means of modernizing to meet competition.

Making a Start

One may safely say that a laboratory can be started profitably when the probable saving in cost of materials and damaged product can be fairly estimated at 50 per cent in excess of the initial cost of laboratory equipment plus the cost of operation. The laboratory will then prove self-sustaining aside from its value as a factor in the control and development of the plant processes. Enlargement and development will follow naturally but should never be allowed to exceed safe limits.

A Comprehensive Plan

By way of suggestion a plan is given showing a fully developed laboratory for a large rubber plant such as might ultimately result by development from a simple chemical laboratory and testing room. The plan is not drawn to scale but serves to illustrate a workable arrangement easily supervised.

The arrangement includes an analytical room for chemical examination of crude rubber and compounding ingredients. This would be equipped with the usual apparatus and reagents for chemical analysis. As a matter of fact it often contains the essential apparatus found in the experimental compounding and curing laboratory although this should find place in another room. One also finds a physical testing machine in the analytical laboratory. Machines for physical testing are more properly equipment for the physical laboratory as indicated on the plan. Only the largest and more ambitious companies will add the research laboratory, which calls for varied and special equipment.

Executive Support

Given such a group of laboratories as the plan shows, their arrangement should afford easy intercommunication and access from the chief chemist's office, but center around the storage room for supplies and samples and the library and conference room.

The laboratory needs no apologist nor special favors. It has always stood on the merits of the results achieved, many of

which are invaluable in the welfare and advancement of the rubber industry.

A newly established laboratory flourishes best if accorded the appreciative cooperation of the factory manager. It is a decided advantage if this official is technically trained, and in addition has acquired practical experience in many phases of rubber goods production and plant operation. Support from such a source stimulates enthusiastic effort on the part of the laboratory staff and enhances rapid development of the laboratory department.

Information Resources

The rubber laboratory outfit should not be limited to apparatus and supplies for testing purposes but should include a working library of books by leading authorities on crude rubber, its evaluation, testing, and manufacture into vulcanized forms; the publications of the American Chemical Society; American Society for Testing Materials; files of the chemical, engineering and rubber trade journals; publications of the Bureau of Standards; the official gazette of the United States patent office; illustrated official journal of British patents; the Canadian patent office record, etc.

The laboratory resources can be further augmented by providing memberships for the chief chemist in the American Chemical Society and its Rubber Division and the American Society for Testing Materials and possibly in other scientific bodies.

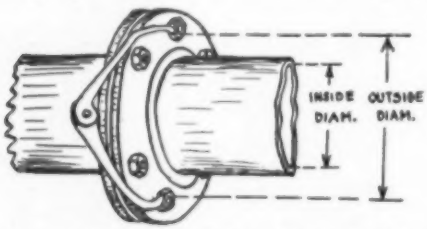
Consulting Assistance

Companies without works laboratories can place dependence on guaranteed standard brands of materials and occasional aid in difficult situations volunteered by the larger concerns dealing in compounding ingredients, colors, accelerators, etc. It should be noted that while the works laboratory engaged in systematic study of plant problems cannot be superseded it can frequently be profitably guided in original work and the solution of obscure manufacturing difficulties by expert technical consultants.

How to Measure a Gasket

By N. G. Near

Contrary to the common belief, it is not necessary to take a flange apart in order to measure for a gasket. Measurements may be accurately made from the outside as indicated on the accompanying illustration.



With a pair of calipers take the distance from the inside of one bolt to the inside of the bolt diametrically opposite. This gives the exact outside diameter of the gasket.

For the inside diameter, either measure the inside diameter of the pipe or consult a handbook giving the inside and outside diameters of standard pipe. The table will give the exact inside diameter. The inside diameter of a gasket should be the same as the inside diameter of the pipe so that no water pocket will be formed.

When ordering a gasket it is usually better to give the exact dimensions, particularly the exact distance between bolts, so that the manufacturer can furnish a gasket of the correct size. He will probably deduct 1/32 or 1/16 of an inch. It is better to leave the deduction to the manufacturer rather than to do it oneself.

The above method is better and quicker than the one usually recommended, namely, to measure from center to center of the bolts and then subtract the diameter of the bolt. No error can be made if the above method is followed.

Natural and Precipitated Whiting Compared

By John M. Ball [1]

Whiting from natural sources and that obtained as a precipitated by-product in manufacturing processes differ very materially in value as rubber compounding ingredients. For example, a good red sheet packing containing a well-known domestic precipitated whiting became unexpectedly soft, loggy and plastic when English gilders whiting was substituted as a filler.

There are in the American market three classes of whiting in several grades, each of which is made for special uses.

1. English cliffstone whiting is prepared in four grades, according to fineness of particle size: Paris white, extra gilders, gilders, and commercial.
2. Domestic natural, high and low grades.
3. Domestic precipitated, high and low grades.

English cliffstone whiting grades are made by mechanically separating and discarding the flint nodules embedded in the chalk rock and water-grinding the latter in edge runner mills, from which the ground chalk or whiting passes through a screen flowing onward to a series of settling tanks. During this flotation the finest chalk particles remain suspended near the surface of the water while the coarsest sink to the bottom. This selective suspension of particles permits settlement of four grades marked by differing particle size. In order of fineness Paris white comes first; extra gilder, second; gilders, third, and commercial, fourth. For ordinary rubber work gilders grade is preferred.

In this country there are deposits of loose calcium carbonate including marl but none to compare in color, uniformity, and fineness with English chalk. For high grade domestic whiting dependence is placed on water-ground and floated selected limestone which when carefully prepared has good color and is an extremely satisfactory filler. The lower grades of domestic natural whiting comprise the loose deposits mentioned or the coarser and off color grades of ground limestone.

Precipitated whiting, for paper making, is precipitated from solution chemically and then carefully washed, dried and ground.

It is much finer in particle size than any natural product, imported or domestic, and when prepared by experienced makers has an excellent white color. A feature of the precipitated material is its alkalinity, something not exhibited by the natural material. This property should be carefully controlled so that it will run uniform. Low grades of precipitated whiting are off color and show variable alkalinity.

As rubber compounding value the natural whiting, both English and domestic, yields soft elastic stock while precipitated whiting gives a short stiff stock. For this reason, as well as its lower cost, precipitated whiting is the standard for molded goods and general mechanicals. Manufacturers of footwear, however, prefer the natural grades because they require upper stocks soft and pliable when cured, and soling stocks which retain well the knurled impressions of the soling calenders.

In tubing machine work another interesting and important difference is noted. Where precipitated whiting is used for such work the stocks expand quickly as they leave the die while natural whiting stocks allow the product to run from the die smoother and closer to gage.

The alkalinity of precipitated whiting is a detriment to its use in single texture proofed goods, such as carriage cloths, etc., because it hastens aging of the rubber film when exposed to sunlight. The alkaline reaction also gives to precipitated whiting slight accelerating action on the cure while natural whiting is entirely inert in this regard.

[1] R. T. Vanderbilt Co., New York, N. Y.

DURING THE FIRST QUARTER OF 1922 UNITED STATES EXPORTS OF rubber hose were estimated at 647,979 pounds, the total increasing for the first three months of 1923 to 1,161,720 pounds.

What the Rubber Chemists Are Doing

Vulcanizing Rubber Threads by Peachey Gases[1]

IT HAS already been proposed to vulcanize a caoutchouc solution in a cold state with the aid of sulphuretted hydrogen and sulphur dioxide by adding both gases consecutively to the caoutchouc after its solution in benzine. In this manner it is possible to vulcanize larger caoutchouc articles but this method is not suitable for the manufacture of thin rubber threads because at the moment in which the normal vulcanization is reached a contraction, pectization, occurs, and it is then no longer possible to obtain smooth rubber filaments or threads of round cross-section by squeezing the rubber solution from the squirting machine.

According to the invention, the above drawback is avoided by first treating the rubber solution with one of the vulcanizing gases, then forming the filaments or threads by squeezing the rubber solution from the press and finally by subjecting the threads to the action of the second vulcanizing gas. In this manner rubber threads of any desired length may be produced by forming the threads between the reaction of the two complementary vulcanizing gases. A practical length for the threads in this operation is about 300 to 500 meters.

Since in the case of rubber threads only very small cross-sections are involved it is desirable to perform the operation slowly. It is likewise of great importance that the sulphur should be deposited very slowly in order that the threads may be uniform along their whole length both in regard to tearing strength and ductility. This may be attained by cooling the second gas. For example in the case of sulphur dioxide a solution with benzine cooled down to about 5 to 10 degrees C. may be employed. Or the gas may be compressed until it is liquified. The reaction of the two gases on the thread is then caused to take place in a retarded manner.

It has been found that with the aid of this process it is possible to cord together also individual threads before or during the treatment with the second vulcanizing gas, when the threads have made their exit from the nozzles. By this cording continuous threads are obtained in which the individual threads can be recognized. A helical cording is therefore obtained having several homogeneous strands according to the number of individual threads.

For the cording, use is made preferably of dilute solutions, while for the production of the single threads a more concentrated solution is preferable because it enables a cheaper and better manipulation to be used.

[1]Max Draemann, 2 von Sandplatz, Cologne, Germany. British patent No. 204,803.

Asbestine as a Rubber Filler[1]

It will be noted in the following abstract of Dr. Ditmar's paper that asbestine as a rubber filler takes on a new and important phase when applied in the new method here mentioned for the manufacture of rubber and gutta percha articles direct from latex.

It is a remarkable fact that at the present day asbestine is a filler comparatively ignored by the rubber industry of Europe, probably because of the inferior quality of the material offered.

In America the high value of asbestine as a rubber filler has long been recognized and used extensively. Henry C. Pearson, editor of THE INDIA RUBBER WORLD described this material in 1899 in part as follows: "Asbestine is the name given to a soft mineral which is composed of a pure fibrous, magnesium silicate. It is obtained in the state of New York from the only known deposit where magnesia occurs in the fibrous state. Asbestine now secures widespread application in the paper industry, and as a filler in the rubber industry.

"The powdered mineral is soft and heavy, and is employed as much for its pigment properties as for its mere mechanical loading property. Formerly it was used extensively in rubber footwear manufacture, and as a filler it is probably better than whiting. Today asbestine is used chiefly for soft rubber goods together with zinc oxide in order to soften the mixings."

Asbestine as a Filler

Asbestine is not strictly inert as a rubber filler. Since colloid chemistry has invaded the field of the rubber industry it has been proved that many so-called inert fillers are far from deserving this designation. Colloid chemistry has made clear the fact, long known in practice, that the structure of compounding material is highly important as a factor influencing its behavior in a rubber mix.

Chemically asbestine is an inert filler; colloidally it is far from being inert. To understand this point we must know about asbestine, talc and asbestos. All three substances are magnesium silicates but they present definite differences in colloidal behavior based upon differences in their structural constitution.

Talc consists of leafy flakes with mother-of-pearl luster and a greasy feel. Asbestos consists of glasslike long-fibered elastic strands, varying widely with different deposits of asbestos. Asbestine consists of short, soft, flexible, elastic, silklike greasy-feeling needles or fibers. Structurally asbestine is intermediate between asbestos and talc, and possesses in consequence typical properties which render it far more valuable in the rubber industry than either talc or asbestos.

Old Process Application

Asbestine may be incorporated in any rubber mixing where intimate felting between rubber and filler is desired, and where the desired effect cannot be obtained with talc. Of the white fillers available for rubber work only chalk is comparable as regards specific gravity, but chalk exerts but slight felting or binding action. On this account asbestine is especially suitable for light substitute containing mixings of white color. It is well known that by working raw rubber on the mixing rolls, the original colloidal network structure of the rubber is destroyed, and that the strength of the finished rubber article always suffers to some extent. By incorporating a material like asbestine with the rubber, however, the network structure which was destroyed in the mills is to a great extent restored. On these grounds the writer considers it advantageous to add about two or three per cent of asbestine to every rubber mixing worked on the rolls. Since asbestine is chemically neutral, it cannot exert an adverse effect in any rubber mixing.

Special Uses of Asbestine

A marked felting and strengthening effect is always desired for rubber heels and soles. If in such mixings half the barytes and half the zinc oxide contents be substituted by asbestine, the desired effect is obtained and the specific gravity of the article is at the same time reduced. For sheet packings, valves and eraser rubbers large percentages of asbestine may be used with great advantage.

Asbestine has the properties of a colloidal silicic acid of high adsorptive powers. Rubber worked in the mixing rolls becomes soft and plastic, a state in which it is eminently suitable for adsorption of the silicic acid. This is a matter of great significance in the manufacture of outer covers for motor tires. In modern rubber technology, every effort is directed toward reducing the internal friction in the tire cover so far as possible. To this end

[1] "Asbestine as a Filler in the Rubber Industry." By Dr. Rudolph Ditmar. The *India Rubber Journal*, December 1, 1923, 11-12.

cord tires are made which contain, as fillers, parallel fibers constituted solely of warp threads and prepared with latex. Rubber adsorbing asbestine resembles these cord threads in its effects, inasmuch as it forms a rubber-asbestine complex which causes no friction to be developed inside the rubber compound. With amorphous non-colloidal silica this state of affairs does not hold true. Asbestine added to a mixing for a tire outer cover acts in exactly the same way as cartilage acts in animal muscle, by suppressing friction and knitting the mass together. These considerations point also to asbestine being a valuable compounding material for cable mixings, eraser mixings containing substitute, mats, tubing machine products, roll covering, etc.

Chemical and Heat Resistance

Asbestine, being essentially magnesium silicate, is stable to acids and suitable for mixings for acid resisting tubing, etc. With its aid also "IT" packing plates may be made, only in this case asbestine is added solely as a heat resisting filler and a little long fiber asbestos should be added to obtain a better felting effect.

Application by New Method

Asbestine being colloidal magnesium silicate, adsorbs softened plasticized rubber, forming a colloidal complex. What takes place here also takes place in the case of rubber latex, but to an even more marked extent.

The colloidal silicic acid has a very high adsorptive capacity for latex, and can separate the rubber from the aqueous serum of the latex, forming a soft elastic rubber-asbestine adsorptive compound. For this purpose no other material approaches asbestine in value and the properties of asbestine as discovered in the old vulcanization process are enhanced manifold in the new process. The asbestine, so to speak, splits up the latex and adsorbs and coagulates the rubber and then binds it to a degree that no other filler can attain.

Thus the use of asbestine as an adjuvant in the manufacture of untearable waterproof latex paper and latex linoleum is not merely for cheapening purposes, but it actually enhances the quality of the product. The "IT" plates and sheet packing are made quite readily from latex and asbestine without the aid of long-fibered asbestos. This is impossible with the old methods. Asbestine can be applied with equal advantage in every case where rubber articles are made direct from latex.

Accelerators[1]

Considerable misunderstanding seems to exist in the British rubber industry today as to the position of rubber accelerators in general rubber practice, and doubt as to whether accelerators have come to stay as a valuable and developing feature of rubber practice. The facts regarding bulk manufacture and use of rubber accelerators in all countries at the present time, and the enormous tonnage of rubber mix committed to the care of accelerators, permit no doubt on this point. The question, rather, is the choice of the correct accelerator for a particular job, and ascertaining the proper conditions of its use.

The facts that the world's consumption of organic accelerators is certainly more than 3,000 tons per year, and that a number of reputable lines of all kinds, from tires to hard rubber, have been based on accelerated cures for a number of years, mean that the industry which is backward in accelerator practice is ignoring one of the chief factors in successful competitive production. Accelerator practice has suffered in all countries, and particularly in England, from the sale and use of unstandardized and disguised specialties, which admit no intelligent control and standard output. Although the evidence is scattered, it is possible to grade accelerators today according to their relative speed in typical mixes.

[1]Paper read by Major V. Lefebure, of the British Dyestuffs Corporation, Ltd., before the Institution of the Rubber Industry, London, December 3, 1923.

The lecturer discussed the influence of accelerators on other features of rubber manufacture, such as milling, storage, and aging. His conclusion is that on all these points the use of the proper accelerator, wisely employed, introduces no harmful influence. In particular with regard to aging, the accelerator can be used with very great advantage in such a way as to make the mix and the cure more consistent, with a finished product showing valuable aging properties.

England has been backward in the matter of the development of organic accelerators. Just as she failed to hold the great advantages which were hers in the middle of the nineteenth century with regard to the dye industry and allowed Germany to reap the huge benefit of the inventions of Perkin and his coworkers, so now she has allowed other countries, particularly America, to forge ahead in a field in which, through the inventions of Peachey and others, she once held a dominating position.

Introduction of Compounding Ingredients Into Rubber Latex[1]

Many materials, such as clay, whiting, talc, and silica, if first wetted, can be added to latex in all proportions, the maximum concentration of total solids in the final mixture approximating to 50 per cent. Zinc oxide can be introduced in small proportions; higher percentages cause coagulation. Carbon black (natural gas black) causes coagulation even in relatively low percentages, 1—2 per cent, but with lampblack larger additions are possible. The coagulation of latex on the addition of fillers appears to arise from: (1) insufficient wetting of the particles, whereby materials which absorb water cause local concentration of rubber to such an extent as to cause coagulation; (2) the presence of a positive charge on the particles of filler, which neutralizes the negative charge on the rubber globules; this can be combated by previous addition of some negatively charged material to the filler or by the introduction of protective colloids, for example starch, dextrin, digitalin, saponin, or certain organic sulphonic or carboxylic acids or their salts into the latex; (3) the filler dissolving to such a concentration as to effect coagulation. By partial coagulation (creaming) of the compounded latex, subsequent deposition of the added powder or powders can be prevented.

The use of latex is of considerable promise for compounding rubber with reversible aqueous colloidal solutions, such as, of barium sulphate, aluminium hydroxide, or silicic acid. A mixture of equal parts of rubber and colloidal silicic acid thus prepared, after coagulation, pressing, and drying, gave a dense, white, non-elastic mass somewhat resembling ivory. Oils and mineral rubber (bitumen), the latter softened if necessary by a suitable solvent, can be emulsified with latex. Casein and glue can also be incorporated. A dry mixture of equal parts of rubber and glue thus prepared, however, will break on bending, and resembles glue rather than rubber. The water resistance of starch can be improved by mixing with a little latex. Vulcanization of latex with sulphur leads to relatively under-vulcanized rubber, with a vulcanization coefficient of approximately 0.5. Higher degrees of vulcanization are attended by excessive coagulation during vulcanization and reduced tendency to form a coherent clot.

[1]C. C. Loomis and H. E. Stump, *Chemical and Metallurgical Engineering*, 1923, 29, 540-542.

TRANSPARENT MOLDED RUBBER

From the practical rubber worker's standpoint the successful manufacture of hot cured molded goods of pure transparent rubber is a noteworthy achievement in rubber technology. This stock that is adapted to all pure gum purposes shows the following tests:

Tensile per square inch	3,750 pounds
Elongation	786 per cent
Set	11 per cent
Ash	1.25 per cent
Specific gravity	0.94

Chemical Patents

The United States

ELECTRODEPOSITION OF RUBBER COATINGS. Rubber is deposited on an electro-conducting surface of an object by bringing this surface into contact with an electro-conducting rubber emulsion and passing a depositing electric current through the surface and emulsion, the latter being free from material in a fermentable state.—S. E. Sheppard and L. W. Eberlin, assignors to Eastman Kodak Co., all of Rochester, N. Y. United States patent No. 1,476,374.

PNEUMATIC TIRE AND METHOD OF MAKING IT. Vulcanizing a pneumatic tire while expanding it against a mold by an expansible rubber core, the core and the tire being separated by a film comprising a chlorine-rubber compound and raw rubber.—H. L. Trumbull, Akron, Ohio, assignor to The B. F. Goodrich Co., New York. United States patent No. 1,476,381.

The Dominion of Canada

VULCANIZATION OF RUBBER LATEX PAPER. In the manufacture of paper adding to the beaten pulp in a beating engine, rubber, or balata, or gutta-containing latex to which has previously been added a small quantity of soluble alkaline sulphide, afterward adding a coagulant to the latex-treated beaten pulp, along with an accelerator and delivering the pulp to a paper making machine wherein the excess of moisture is removed, and the paper finally dried by heated rolls, which simultaneously vulcanize the rubber in the paper.—Frederick Kaye, Manchester, England. Canadian patent No. 235,913.

The United Kingdom

RUBBER PAINT. A composition which may serve as a paint vehicle or paint, comprises rubber, water, and an oil solvent, such as linseed oil, or turpentine, kerosene, benzene, etc. Pigments may be added. In an example, 25 per cent by weight of ground vulcanized rubber is heated to between 140 and 170 degrees C., with 75 per cent of solvent until solution occurs, and the temperature is raised to 200 degrees C. and then to 260 to 310 degrees C. to render combination permanent. The liquid is strained while warm and agitated with an amount of water equal to not more than 75 per cent of the combined rubber and oil. Preferred proportions are: rubber 1—50 per cent by weight of the solvent, and water not more than 75 per cent by weight of the rubber and oil. Paints are also made by adding pigments to the rubber and oil combination, without addition of water.—S. R. Trevor, Sulphur Beach, and J. E. Moosman, Bloomfield Road, Epson, both in Auckland, New Zealand. British patent No. 204,093.

VULCANIZING INDIA RUBBER. Zinc or cadmium propyl xanthate or one of the alkyl series, namely, methyl, ethyl, butyl, amyl, is added to rubber mixings which are subsequently vulcanized at a temperature of 60 to 130 degrees C. whereby over-vulcanization is prevented however long the heating may be continued. Example: 51¼ rubber; 5 sulphur; 20 zinc oxide; 1 magnesia; 18 gas black; 3 paraffin wax, and 1¼ zinc propyl xanthate heated for 20 minutes at 98 degrees C. gives a product having a coefficient of vulcanization of about three, which remains the same after further 2½ hours heating.—Dunlop Rubber Co., Ltd., 1 Albany Street, Regents Park, London. D. F. Twiss, Royal Road, Sutton Coldfield, Warwickshire, and F. Thomas, 1032 Chester Road, Erdington, Birmingham. British patent No. 204,757.

RUBBER MIXINGS. A process for incorporating vulcanizing, compounding, and filling materials with rubber consists in suspending, emulsifying, or dissolving the materials in water, adding them in this form to latex, and depriving the mixture of substantially all its water content.—E. Hopkinson, 1790 Broadway, New York, N. Y. British patent No. 205,487.

Germany

Patents Issued, With Dates of Issue

387,631 (November 27, 1919). Method of making horn-like substances. Dr. Carl C. Schwalbe, Elberswalde.

Austria

Patents Issued, With Dates of Publication

A 2449-22 (September 15, 1923). Method and apparatus for recovering volatile solvents during spreading of rubberized fabrics and the like. Martini & Hünecke, Berlin.

A 2677-22 (October 15, 1923). Method of preventing natural and artificial rubber or rubber-like substances from becoming sticky or resinous. Farbenfabriken vorm. Friedrich Bayer & Co., Leverkusen.

A 4744-22 (October 15, 1923). Method of making artificial substances by condensing horn substance with formaldehyde. Dr. H. Goldschmidt, Berlin-Grunewald and O. Neuss, Berlin-Charlottenburg.

A 6296-21 (September 15, 1923). Method of making artificial horn and the like. R. Schwartz, Vienna.

COEFFICIENT OF VULCANIZATION

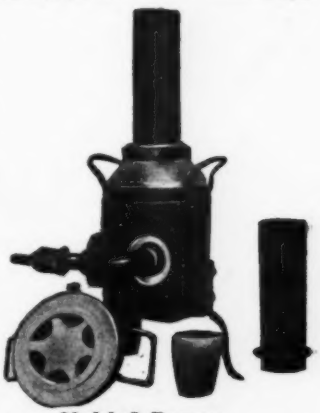
Since many technical mixings contain ingredients other than rubber, C. O. Weber suggested that the percentage of combined sulphur would be more conveniently expressed as a percentage calculated on the rubber present. Thus in a mixing containing 90 per cent rubber and ten per cent sulphur, giving on vulcanization a product containing 4.5 per cent combined sulphur, the coefficient of sulphur would be $4.5 \times 100 \div 90 = 5.0$. In a case where filling materials were present to the extent of 50 per cent, the rubber content being 45 per cent and the combined sulphur after vulcanization 2.25 per cent, the coefficient would be $2.25 \times 100 \div 45 = 5.0$. The similarity in the degree of combination of the rubber with sulphur in the two mixings is more apparent when the proportion of combined sulphur is expressed in this way. B. W. D. Luff. *The Chemistry of Rubber*, 1923.

RUBBER GREEN NO. 3

A new line of organic colors for rubber work has recently been developed, of which "Rubber Green No. 3" is an example. This green gives a very pleasing shade of green in rubber stocks. Its tinctorial value is so great that very little of the color material is required. The same is true of the other colors of the same manufacturer. The line embraces colors suited to all the different rubber cures, which is said to be an advantage not offered in competing colors.

LABORATORY CRUCIBLE FURNACE

A crucible furnace is a very convenient addition to the usual equipment of an analytical laboratory, particularly for fusions and special purposes. The one shown in the illustration is very compact and effective. It has a temperature range from 600 to 1,100 degrees C. without air blast and accommodates a single crucible in sizes ranging from 1¼ by 1⅜ inches to 8 by 8¼ inches. For work on a smaller scale burners without a fire clay body are made to operate with an air blast producing a flame 20 mm. in diameter.—Palo Company, 153 West 23rd street, New York, N. Y.

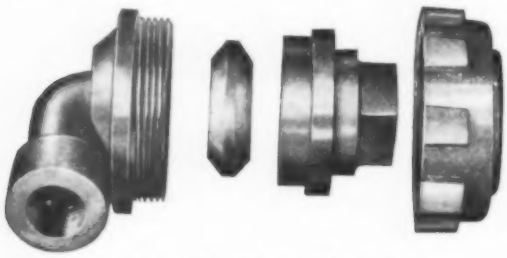


Model C Furnace

New Machines and Appliances

Leak-Proof Swing Joint

An effective leak-proof swing joint is that represented in the illustration. It is made of best quality bronze, accurately machined. There are but three metal parts in the joint, which is assembled with a molded rubber sealing ring of special form. There is always a slight compression on the rubber sealing ring.



Parts Comprising Diamond Swing Joint

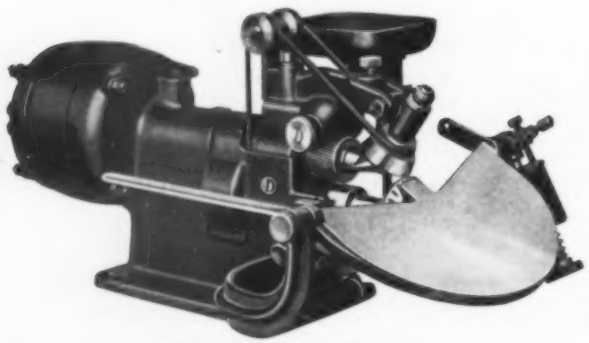
which is of diamond cross-section with a circular cavity molded around its inner diameter.

This joint is said to hold securely air, gas, steam, or steam and water alternately, or hot fluid of any kind at any pressure. They are recommended for swing joint equipment on hydraulic presses because they can be tightened and secured against leakage of pressure by means of a cotter pin dropped through a hole in the flange locking against the lugs of the coupling piece.—Diamond Metal Products Co., 406 Market street, St. Louis, Missouri.

Rubber Heel Trimmer

A very recent development to aid the manufacturer of rubber heels, soles, and numerous small molded rubber goods generally, is the trimming machine here pictured, which represents the motor driven form. It is also made for factory power connection if so preferred.

Among its numerous improvements over other trimmers is its driven upper cutter guard which assists in feeding the work and speeding production. It affords perfect protection to both operator and the work, eliminating chance of injury to both.



Trimming Machine Model B

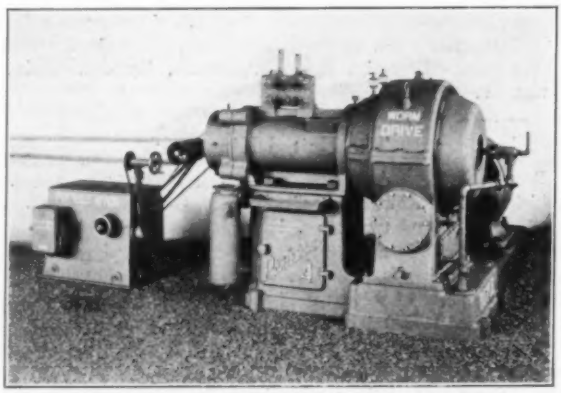
This machine was designed especially for trimming rubber and fiber heels and soles and successfully supplies the need of the manufacturer of cupped heels, or heels of unusual shape or of short radii, who has often previously considered it necessary to trim such heels by hand.—United Shoe Machinery Corporation, Boston, Massachusetts.

Perfected Worm Driven Tubing Machine

A new departure in tubing machines is here pictured. The distinguishing characteristic of this machine is the worm-and-gear intermediate transmission feature between the motor and the machine proper. The driving-worm shaft is in direct connection with the armature shaft through a flexible coupling which insures the proper alinement of these parts. The gear, which is driven by the worm, transmits power to the stock worm through a bonnet clutch and the block of the marine thrust bearing. Hence, the use of all intermediate spur gearing is obviated.

The adaptation of worm-and-gear drive to the tubing machine allows more compact design and assembly, thus saving floor space and considerably reducing the height of the machine. The tubing cylinder and the worm-and-gear mechanism are mounted on a single cast-iron base of massive proportions to which the motor base, although cast separately, is securely bolted.

This tubing machine will accommodate the same wide range of usefulness as the older models of its size, which have established a reputation, especially in the production of automobile tire treads and inner tubes. It may be conveniently adapted to the insulation



Royle Perfected Worm Driven Tubing Machine

of wire and cable and there is an exceptional use for it in the straining of crude or reclaimed stock.

The chief superiority of the worm driven tubing machine lies in its noiseless and efficient operation. The form and structure of the teeth and the continuous transmission qualities of the worm produce an interaction and meshing that is at once smooth, free of vibration, and quiet.—John Royle & Sons, Paterson, New Jersey.

Power Toggle Vulcanizing Press

A novel type of power operated toggle press designed for molding and vulcanizing mechanical rubber goods is shown in the illustration.

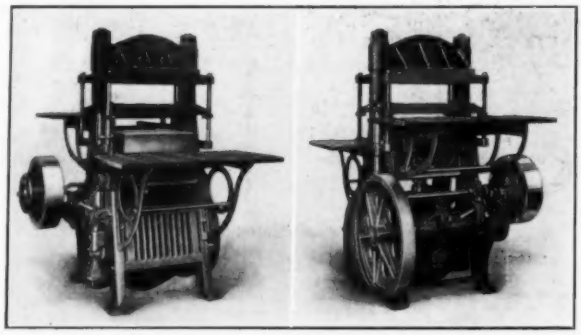
The rising platen starts rapidly, gradually slowing. The pressure increases constantly and uniformly until just before the platens close. The upward platen movement is almost imperceptible as the pressure reaches maximum, giving the equivalent of hydraulic pressure. The descent of the press bed is rapid, thus making the complete cycle of operation much faster than could be done on a hydraulic press.

Safety in operation is secured by a positive automatic throw-off on the impression and on the descent of the bed. It can also be stopped in any desired position.

Simple adjustment is another desirable feature, the pressure

being adjusted by means of a spanner mender and series of holes in a flange on the adjusting screw.

The press is constructed with one, two or three openings for molding and vulcanizing operations. An important advantage is



Front Rear

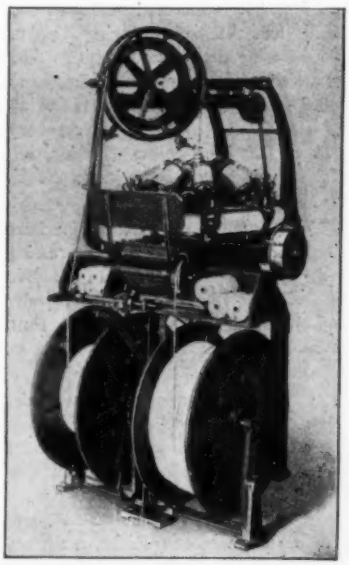
The Standard Power Toggle Press

the minimum amount of expense for maintenance of these machines, pumps, accumulators, packings, etc., not being required.

The machine is either motor or belt driven and units can be added as desired with only the cost of the new machine. A one horse-power motor is ample to operate one machine.—The Standard Machinery Co., 41 Park Row, New York, N. Y.

New Rapid Braiding Machine

Braiding machines are indispensable equipment in rubber factories producing textile-covered insulated wire, and other goods of which braided internal or external plies form a part, such, for example, as piston rod packings, etc.



Paragon Braiding Machine

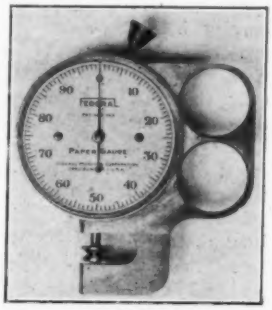
The illustration shows a new braiding machine of rotary type built especially for small diameter work. It is of true rotary type with bobbins revolving in concentric orbits and two sets of carriers traveling in opposite directions at a speed of 180 r. p. m., which yields 1,440 picks, or plaits, a minute of braided product. This is said to be the highest practical speed yet attained in a braiding machine, and allows covering insulated wire at rates of 80 to 125 inches a minute, according to the braiding pitch desired.

The machine has a wide range; it will braid as fine and close as 101 picks an inch or as open and coarse as four picks. The output at 101 picks is 14 inches a minute and at four picks, 470 inches a minute.

Some new and special features embodied in this braider are an automatic oiling system; an inner track suspension for the upper carriers, which saves 50 per cent in the driving power required; deflection of threads over and under for braiding intermesh, by causing the threads to glide along the polished surfaces of fixed guides; an improved thread tension control which insures a smooth and even product; and yarn-carrying capacity of 14 pounds.—National Indicator Co., 852 Vernon avenue, Long Island City, N. Y.

Pocket Thickness Gage

A decidedly convenient and useful pocket thickness gage of dial reading type, is shown in the illustration. Although designed originally for measuring paper, it is equally adapted for gaging rubber, fabrics or any sheet material.



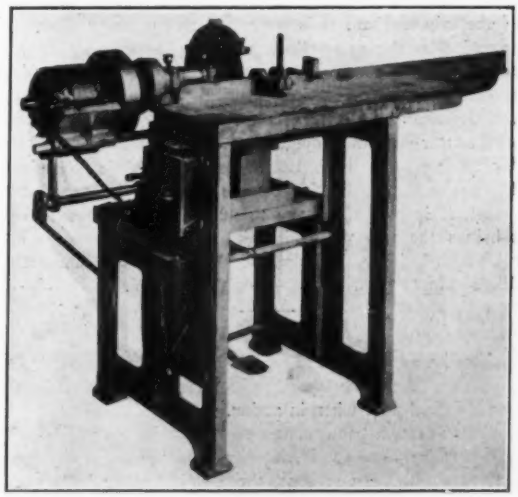
"Paragon Swift" Rubber Gage

The gage weighs five ounces and is a half inch in thickness. Measurements are effected by pushing the small button on top of the gage which opens the jaws to their full capacity of 0.100 inch. Both jaws are ground with ample radius allowing the material to be quickly inserted. The dial is graduated to read by intervals of .001 of an inch. The lower measuring disk can be raised or lowered by turning a small adjusting screw under its support, thus allowing quick resetting of the index at zero in case of wear.—Federal Products Corporation, Providence, Rhode Island.

Tube and Stock Cutting Machine

In factory practice it is frequently necessary to cut into short lengths tubing, hose and solid stock, as in the manufacture of automobile radiator connections, steam hose, etc., also to scarf oil well rings and similar products.

The machine shown herewith is built in two sizes, one for cutting tubing up to one-inch diameter and the other capable of cutting three-inch, seven-ply steam hose. It consists of a direct connected, motor operated cutting disk mounted on a bench



Heavy Tube and Stock Cutter

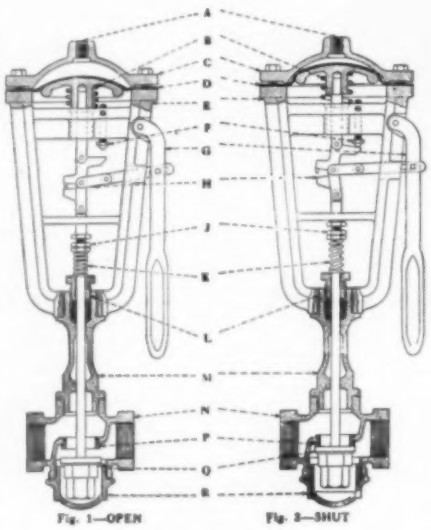
attached to a substantial iron frame. The knife is under control of the operator by means of a pedal.

The machine is capable of making as many as 1,400 cuts an hour. Its labor-saving value is shown by the fact that in one factory eight machines handle the work formerly requiring 28 operatives. The advantages of a machine of this sort in a rubber

factory are much the same as a power circular saw in a woodworking establishment. It is, in fact, very nearly indispensable where volume production is required.—H. Monroe Smith, P. O. Box 198, Passaic, New Jersey.

Fuel Oil Shut-Off Valve

The illustrations show the TAG fuel oil shut-off valve in open and closed locked positions. This valve connected in the fuel oil lines of oil burning boilers and other devices, automatically shuts off the oil flow the instant that the steam or air pressure required for atomizing falls below the required minimum. The valve locks itself and cannot be reopened until the trip lock mechanism is reset by hand. Thus oil leakage into the furnace and the possibility of an explosion are impossible with this valve.



Tag Shut-Off Valve

The valve consists essentially of a reverse-acting valve N on the bonnet of which is mounted a two-arm spider E which supports a diaphragm chamber the upper half of which is formed by the metal dome C and the lower half by the reinforced rubber diaphragm D against which a saucer rests, the latter being connected to the upper part of the trip mechanism H. The lower part of the trip mechanism is connected to the valve stem which is surrounded by the valve closing spring K. The steam or air pressure enters the diaphragm chamber through A and holds the saucer against the pressure of spring B.

If the steam or air pressure fail, the spring B will immediately raise the saucer and thus operate the trip mechanism which enables the spring K to instantly raise the valve disk Q against its seat P, thus instantly shutting off the flow of oil to the burners.

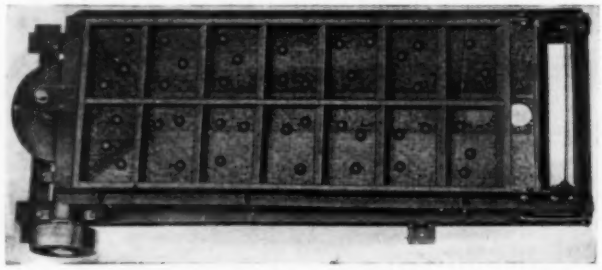
To reset, it is only necessary to manipulate the hand lever G which brings the trip mechanism into its proper relation as an integral part of the valve stem.—C. J. Tagliabue Manufacturing Co., 18-88 Thirty-third street, Brooklyn, N. Y.

Rotex Sifter

The sifter here illustrated in top view with cover removed gets its name, "Rotex," from the fact that its sieve boxes travel in a circular or elliptical path when in action.

The sifter is divided into panels the crosswire bars of which are cut with angular faces at 45 degrees to the plane of the screens. In each panel, between screens, three solid rubber balls are free to bounce about when the machine is in action. The balls are given an upward motion by contact with the angular cross bars and are thus directed upward, striking the under side of the screen and thus keeping its meshes free from wedging particles and promoting the sifting efficiency.

This self-contained sifter is very compact. It may be suspended from the ceiling on top of a hopper or mixer or in many other places where no other sifter could possibly go. It consumes less than a quarter of the power required to operate reels of equivalent capacity. For this reason its use is extending into many industrial lines, including rubber and compounding ingredients.—The Orville Simpson Co., 1230 Knowlton street, Cincinnati, Ohio.



Top View of Rotex Sifter

RUBBER COVERING FOR CAST IRON PULLEYS

Frequently it is desirable to have pulleys covered with rubber. This is especially true of elevator and conveyor head pulleys. Usually 4-ply rubber belting is fastened with rivets or flat head bolts to the face of the pulley.—W. A. Jones Foundry & Machine Co., 4401-51 West Roosevelt Road, Chicago, Illinois.

Machinery Patents

APPARATUS FOR MAKING DIPPED RUBBER GOODS. An apparatus for making dipped goods comprises a pair of internally heated revolvable form carriers, pipe connected for equalizing the heat of steam or hot water circulation. The form carrier is mounted in a compartment the bottom of which is elevated and provided with a trap door under which is run the tank carrying dipping cement. The trap remains closed during the interval between dips while the solvent in the dipped articles dries from the coating from the inside outwardly. The closed container in which the revolving form holders operate serves as a condensing chamber for recovery of the solvent evaporated.—Albert Boecler, Malmo, Sweden, assignor to Benzine Condensation Co., Inc., of New York, N. Y. United States patent No. 1,475,738.

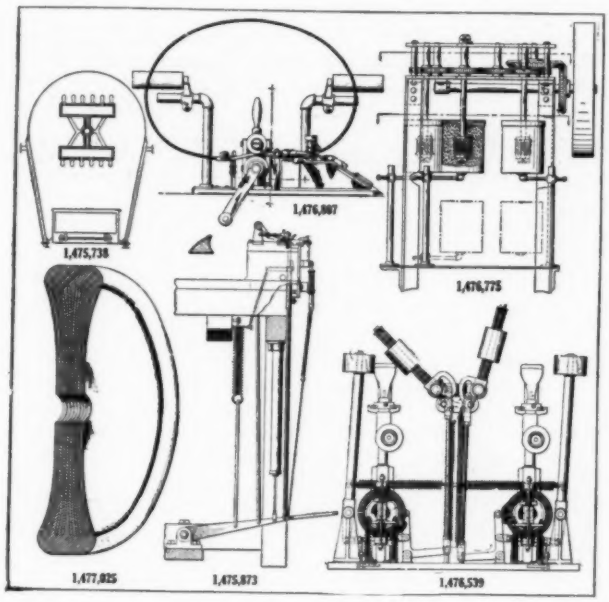
BEAD-SPLICING MACHINE.—The foot power bench machine here pictured splices rubber tire beads into ring form by compressing the joint between ends. By the same treadle action an adhesive fabric strip of proper length to encircle the bead is automatically cut, applied, and rolled around the bead joint.—Edward D. Putt, assignor to The Firestone Tire & Rubber Co., both of Akron, Ohio. United States patent No. 1,475,873.

ROLLING FOXING ON FOOTWEAR. This machine comprises two pairs of roller units which owe their adjustability to the work and their compressive effect in rolling to sets of coiled springs. While the presser rolls are held in contact with the foxing, relative movement of the roller carrying means and the shoe last support is effected causing the rollers to roll completely around the edge of the sole in either direction as desired.—Joseph E. Perrault, assignor to Hood Rubber Co., both of Watertown, Massachusetts. United States patent No. 1,476,539.

APPARATUS FOR MAKING ABRASION TESTS. A series of vertical shafts are arranged to revolve by a chain of gears connected to a source of power. On the lower ends of these shafts are clamped sample flat circulation rings of stock to be tested. The abrasive test is made by immersing the samples attached to the shafts in containers holding selected abrasive material and revolving the samples in it.—J. C. Sproull, Akron, Ohio, assignor to The B. F. Goodrich Co., New York, N. Y. United States patent No. 1,476,775.

APPARATUS FOR COVERING BEAD RINGS. Applying fabric or rubber strips around bead rings, particularly of flexible wire, is ac-

complished by mechanically straightening a portion of the ring and automatically winding strip material about that portion and thereafter permitting the straightened part of the ring to resume



its normal curvature.—Benj. A. Evans and Irving Zwisler, both of Akron, Ohio, assignor to The B. F. Goodrich Co., of New York, N. Y. United States patent No. 1,476,807.

FLEXIBLE WHEEL. A vehicle wheel comprising an assembly of wood veneer plies alternating with bonding plies of rubber and a tread of rubber about the periphery of the ply assemblage. The completed wheel is vulcanized.—Harry N. Atwood, Boston, assignor to Rubwood, Incorporated, Lawrence, both in Massachusetts. United States patent No. 1,477,025.

Other Machinery Patents

The United States

1,474,654 Tire treating machine. G. A. Urbach, Pittsburgh, Pa.

1,474,912 Nipple perforating device. P. A. Raiche, assignor to Davol Rubber Co., both of Providence, Rhode Island.

1,476,270 Machine for preparing fabric. E. D. Putt, assignor to The Firestone Tire & Rubber Co., both of Akron, Ohio.

1,477,267 Repair vulcanizer. E. G. Killmer, Chicago, Ill.

1,477,391 Apparatus for use in the manufacture of rubber goods. T. Sloper, Devizes, England.

The Dominion of Canada

235,808 Tire building apparatus. The Fisk Rubber Co., Chicopee Falls, assignee of F. G. Neal, Springfield, Mass., U. S. A.

The United Kingdom

203,835 Device for testing golf balls. S. H. McQuown, 194 Regents Park road, London.

204,406 Apparatus for applying sealing rings to flat built tires. W. J. Mellersh-Jackson, 28 Southampton Buildings, London. (Hartford Rubber Works Co., 691 Park street, Hartford, Connecticut, U. S. A.)

Germany

Design Patents Issued, With Dates of Issue

857,123 (January 3, 1922). Mounting device for machines for making tire covers. The Dunlop Rubber Co., Limited, London; represented by: Dr. R. Wirth, C. Weihe, Dr. H. Weil, M. M. Wirth, Frankfurt-am-Main, and T. R. Koehnhorn and E. Noll, Berlin, S. W. 11.

857,124 (January 3, 1922). Pressure device for machines for making tire covers for pneumatic tires. The Dunlop Rubber Co., Limited, London; represented by: Dr. R. Wirth, C. Weihe, Dr. H. Weil, M. M. Wirth, Frankfurt a. M., and T. R. Koehnhorn and E. Noll, Berlin S. W. 11.

857,125 (January 3, 1922). Pressure device to be used in manufacturing tire covers against those parts of the corners lying on the core. The Dunlop Rubber Co., Limited, London; represented by: Dr. R. Wirth, C. Weihe, Dr. H. Weil, M. M. Wirth, Frankfurt-am-Main and T. R. Koehnhorn and E. Noll, Berlin S. W. 11.

857,428 (August 13, 1923). Apparatus for roughening up rubber and the like. Ackermann & Schmitt, Stuttgart-Cannstatt.

858,153 (October 5, 1923). Kettle press. Eisenwerk Gebrüder Arndt G. m. b. H., Berlin.

Patents Issued, With Dates of Issue

386,107 (November 22, 1921). Tire-mold apparatus. The B. F. Goodrich Co., New York, United States; represented by: G. Benjamin and H. Wertheimer, Berlin S. W. 11.

Process Patents

The United States

1,474,510 Method of making battery jar covers. S. T. Campbell, assignor to The Aetna Rubber Co., both of Cleveland, Ohio.

1,474,943 Method of making game balls. E. F. Quinn, Chicopee, Mass.

1,475,300 Method of making cord tires. W. B. Harsel, assignor to The Goodyear Tire & Rubber Co., both of Akron, Ohio.

1,475,463 Method of making battery vents. H. Weida, Highland Park, N. J., assignor to India Rubber Co., a corporation of New Jersey.

1,475,602 Method of making steering wheels employing rubber. H. E. Sheller, assignor to Sheller Wood Rim Co., both of Portland, Indiana.

1,476,226 Waterproofing process for textile fabrics, paper, and such materials. R. A. Grimoin-Sanson, Oissel, France.

The Dominion of Canada

235,987 Method of manufacture of rubberized fabrics. R. W. Brown, Akron, Ohio, U. S. A., assignor to The Firestone Tire & Rubber Co. of Canada, Ltd., Hamilton, Ontario.

235,809 Method of manufacture of tires. The Fisk Rubber Co., Chicopee Falls, assignee of F. G. Neal, Springfield, and David Fleming Logan, Chicopee Falls, all in Massachusetts, U. S. A.

The United Kingdom

204,080 Method of printing on or ornamenting crêpe rubber. Plantation Rubber Manufacturing Co., Ltd., and M. M. Dessau, 14 Mincing Lane, London.

204,255 Method of attaching an outer to a welt sole. L. H. Burrows, Murray street, Hobart, Tasmania.

204,323 Method of attaching tires to rims. L. J. B. F. DeLeon, 16a, Rue d'Alger, Marseilles, France.

204,400 Method of drying rubber. A. H. Stevens, 88 Chancery Lane, London.

204,668 Method of printing on crêpe rubber with ink. Plantation Rubber Manufacturing Co., Ltd., and M. M. Dessau, 14 Mincing Lane, London.

205,201 Method of utilizing waste rubber. T. Gare, The End House, Green Lane, Hazel Grove, Stockport, Cheshire.

Germany

Patents Issued, With Dates of Issue

386,575 (April 9, 1921). Method of vulcanizing round rubber thread. Max Draemann, von Sandtplatz 1, Köln-Deutz, and Max Buhling, Richlerstrasse 88, Köln.

387,513 (March 3, 1923). Method of making lines on balls. Norddeutsche Gummi-und-Guttapercha-Waren-Fabrik vormals Fonrobert & Reimann A.-G., Berlin.

Austria

Patents Issued, With Dates of Publication

A 5096-22 (October 15, 1923). Method of making multiple-layered plates of imitation horn. Deutsche Kunsthorn-G. m. b. H., Hamburg.

A 5239-22 (September 15, 1923). Method and apparatus for making round bodies from plastic substances. Schicketanz & Co., Luxdorf b. Gablonz a. N.

A 6796-21 (October 15, 1923). Method of making rubber shoes. L. Dunker and A. Stihe, Helsingborg.

ACCORDING TO COMPILATIONS PREPARED BY THE RUBBER ASSOciation of America, the value of rubber goods produced in the United States during the year 1922 was $795,084,445, an increase of 10.4 per cent over the association's figures for 1921.

The Editor's Book Table

Book Reviews

"THE CHEMISTRY OF RUBBER." By B. D. W. LUFF, RESEARCH Chemist of the North British Rubber Co., Limited, Edinburgh, 1923; Ernest Benn, Limited, 8 Bouverie street, London, E. C. 4. Cloth, illustrated. 232 pages, 7½ x 10 inches, indexed.

This is the most informing volume on the chemistry and technology of rubber that has appeared for the chemist, technologist, or general reader. The author is eminently qualified by reason of his training, experience and manufacturing connection to tell progressively the story of rubber chemistry gathered from original historical, scientific and practical manufacturing sources.

This he has done most satisfactorily, correlating the information in a series of 14 chapters as follows: Introductory and Historical; Rubber Latex, its Composition and Properties; Sources of Rubber, Wild Rubber; Sources of Rubber, Plantation Rubber; Composition of Crude Rubber; Physical Properties of Raw Rubber; Chemical Properties, Constitution and Synthesis; Vulcanization; Properties of Vulcanized Rubber; Factors Affecting Vulcanization; Compounding Ingredients; Accelerators; Methods of Manufacture; Methods of Analysis.

The book is well illustrated and indexed and will prove distinctly helpful to rubber chemists and all who have scientific or practical interest in the progress of the rubber industry.

"RUBBER PRODUCING COMPANIES—1923, WITH LIST OF DIrectors and Secretaries." Compiled by The Mincing Lane Tea & Rubber Share Brokers' Association, Limited. Published by "The Financial Times," Limited, 72 Coleman street, London, E. C. 2, England. Cloth, 670 pages, 5½ by 9 inches.

In the preface to this useful annual, which contains as usual many items of service to the rubber industry, mention is made of certain changes transpiring since the publication of the previous issue, foremost among them being the carrying out of the rubber restriction scheme. It is noted also that few holders of rubber shares have relinquished their holdings, notwithstanding uncertainties, thus showing their confidence in the future of the industry. The estimated world's output of rubber for 1923 is expected to be in the neighborhood of 360,000 tons, the United States alone having taken during the first six months of the year a total of 193,000 tons.

"THE INSTITUTION OF THE RUBBER INDUSTRY, YEAR BOOK for 1922-1923." Faraday House, 10 Charing Cross Road, London, W. C. 2. Paper and cloth, illustrated, 448 pages, 5½ by 8½ inches.

This year book consists of two divisions. One is devoted to the list of officers, general council, committees, membership list, objects of the institution and president's report; the other and larger part consists of the papers read at London and Manchester. These form a valuable contribution to the literature of rubber technology contributed by recognized authorities in British and American rubber industry. The papers cover a wide range of practical topics very effectively presented and discussed. The Institution of the Rubber Industry is to be commended for preserving these lectures in permanent form as a contribution to rubber knowledge.

"FACTS AFFECTING THE IMPORTATION OF RUBBER PRODUCTS Into the Balkan Countries and Into Poland and Danzig." Two separate monographs prepared by the Rubber Division, Department of Commerce, P. L. Palmerton, Chief. Published by Bureau of Foreign and Domestic Commerce, Washington, D. C. Paper, 8 by 9 inches.

German rubber products are now flooding the markets of the small nations under consideration: Poland, Danzig, and the Balkan countries, comprising Rumania, Yugoslavia, and Bulgaria. Austria, France, and the United Kingdom are also competing for trade with these nations, and the share of the United States is comparatively insignificant. There is only one rubber manufacturing plant in the Balkans, and three such concerns in Poland, all of the latter having been founded after the war.

"SYSTEMATIC SURVEY OF RUBBER CHEMISTRY." BY CLAYTON W. Bedford and Hubert A. Winkelmann. The Chemical Catalog Co., Inc., 19 East 24th street, New York, N. Y. Cloth, 385 pages, 6 by 9 inches.

The authors have perfectly described this volume in the subtitle, "A bibliography, with copious extracts, of the entire literature of rubber chemistry and closely allied subjects, thoroughly indexed by authors and subjects, and completely cross-referenced; together with a patent index, and introductory chapters summarizing the present status of rubber chemistry."

The book contains a brief appropriate introduction by Dr. W. C. Geer. Dr. L. B. Sebrell contributes a chapter in which he reviews the development of organic accelerators of various types, mechanism of accelerator action, and vulcanization at low temperatures. Dr. W. J. Kelly discusses theories of vulcanization classified under three main headings: (1) physical theory; (2) physical-chemical or adsorption theory, and (3) chemical theory.

The main portion of the book comprises an author index and a subject index, cross-referenced, followed by a patent index arranged alphabetically by countries.

The authors by the completeness and accuracy of their work have rendered invaluable aid to rubber chemists the world over.

"FACTS AFFECTING THE IMPORTATION OF RUBBER PRODUCTS into Turkey and Baltic Countries." Two separate monographs prepared by the Rubber Division, Department of Commerce, P. L. Palmerton, chief. Published by Bureau of Foreign and Domestic Commerce, Washington, D. C. Paper, 8 by 9 inches.

Although no complete Baltic statistics of rubber goods imports are available, this monograph contains some valuable data regarding Esthonia, Lithuania and Latvia, which together constitute the Baltic countries. The bulk of all trade of these countries is with Germany and the United Kingdom. The principal rubber products exported to Turkey are automobile tires and rubber shoes. There is practically no manufacturing in the country, which, recently declared a republic, combines European and Asiatic Turkey.

"BULLETIN OF THE IMPERIAL INSTITUTE." VOLUME XXI, No. 1, 1923. Published by John Murray, Albemarle street, W., London, England. Paper, 289 pages, including appendix, 6 by 10 inches.

This report of the operations of the Imperial Institute covers a period including part of the war, but chiefly reviews the work accomplished by the organization during the last three years. During the war the annual report had been discontinued, and a detailed account at the present time regarding the systematic investigations carried on by the Institute was considered desirable. Included in this bulletin is a detailed report of the work of the Rubber Research Committee, while among the special reports is a summary of investigations conducted for the colonies and protectorates, in which the notes regarding the rubber industry in those regions constitute an important feature.

"AIDE-MÉMOIRE DE L'INDUSTRIE DU CAOUTCHOUC ET DES Matières Plastiques." By A. D. Luttringer. Preface by A. Haller. A. D. Cillard, Editor, 49 Rue des Vinaigriers, Paris, France. Paper, illustrated, 225 pages, 8 by 5 inches.

This book, in French, is a compilation of useful, scientific and practical data adapted to the needs of the engineer, chemist and factory superintendent. The material is classified in chapters as follows: Mathematical and Physical References; Chemical Formulas and Properties of Materials; Descriptive List of Technical Products; Crude Rubber Statistics, Analyses, etc.; Mechani-

cal and Physical Testing of Rubber and Textiles; Methods for Chemical Analysis of Crude and Vulcanized Rubbers; Principal Compounding Ingredients and Other Materials; World's Crude Rubber Production and Distribution; Plastic Materials, chiefly Celluloid.

The facts and methods given are well authenticated and strictly up to date. The book will prove a very helpful addition to the rubber chemist's library.

"BUSINESS FUNDAMENTALS." HOW TO BECOME A SUCCESSful Business Man. By Roger W. Babson. Published by B. C. Forbes Publishing Co., New York, N. Y. Cloth, illustrated with charts and tables, 258 pages, 5 by 7½ inches.

Twenty years ago Roger W. Babson decided that business, like the sciences, could be reduced to an exact basis. A study of one hundred years of business convinced him that there are only a few laws that are really fundamental, notably Isaac Newton's law of action and reaction. With these in mind and the necessary statistical facts at hand he believes that a man can approach any industrial, commercial or financial problem with confidence, or undertake the administration of almost any business, that a man's possibilities of success are limited only by his skill in the application of the principles.

That his logic is sound, witness the success of the Babson Statistical Organization and its present prestige. His methods of averting loss and increasing profit in business and investments, which have been found practicable by thousands of leading business men, are fully explained in this valuable book. It is a very human yet scientific treatise on the principles of business success for executives, proprietors and investors, which, like the Babson-chart, is in a class by itself.

"COMMERCE YEARBOOK, 1922, INCLUDING EARLY PART OF 1923." Compiled under the direction of the Bureau of Foreign and Domestic Commerce, Julius Klein, director. Published by Government Printing Office, Washington, D. C. Paper, 692 pages, with index, 6 by 9 inches.

This first issue of the Commerce Yearbook has been prepared in response to the requests of American business men, economists and executives, who desired to have an authoritative review of the economic year. Preceded by a general summary of the chief industrial events of 1922, the main divisions include reviews of the various commercial activities, some dozen pages being devoted to a detailed survey of the rubber industry. Several maps and graphs add to the value of the publication.

"IMPORTERS' AND EXPORTERS' DIRECTORY OF THE NETHERlands East Indies." Fifth Edition. Two separate pamphlets, published by the Division of Commerce of the Department of Agriculture, Industry and Commerce, Buitenzorg, Java. Paper, 28 and 51 pages, 10 by 12½ inches.

In these two publications are included some noteworthy items regarding the import and export trade of the Dutch East Indies, while there are some valuable tables of statistics. An interesting feature is an account of the rubber industry in that division of the Far East.

New Trade Publications

AN ILLUSTRATED, ATTRACTIVELY PRINTED BOOKLET, ENTITLED "OUR Imports and Who Use Them," is being sent out by the National Foreign Trade Council, India House, New York, N. Y. One of the sections of this publication is headed, "The Rubber Industry," and attention is called elsewhere in its pages to the various everyday uses of rubber, particularly in the field of sports. Members of the National Foreign Trade Council include E. H. Huxley, of the United States Rubber Export Co., and Charles B. Seger, of the United States Rubber Co.

"TAG RUBBER CATALOG." THIS PUBLICATION BY THE C. J. TAGliabue Manufacturing Co., Brooklyn, N. Y., covers the full range of Tag instruments for automatic control of hot vulcanization under all conditions. Construction of the various devices are illustrated, their mode of application shown by diagrams, and sample chart records given. Tag controllers are familiar equipment in most American rubber factories, and rubber engineers generally will find this catalog valuable for reference.

"THE TAG STEAM PLANT CATALOG, INCLUDING REFRIGERATION Applications." This highly interesting and profusely illustrated book of 60 pages, issued by the C. J. Tagliabue Manufacturing Co., Brooklyn, N. Y., is much more than an ordinary catalog of steam appliances and has distinct value as technical literature. It contains a practical article on combustion economy, showing what happens in the furnace; elucidates fuel and furnace conditions, and exemplifies in a series of chart reproductions and diagrams the operation and value of the "Tag" mono-duplex simultaneous record of loss of unconsumed combustible gases. Typical plans are shown for installing these recorders. Subsequent sections deal with industrial, mechanical, and dial indicating thermometers adapted to many industrial purposes; vacuum gages; automatic control apparatus, etc.

A COMPREHENSIVE BOOKLET, ENTITLED "ENGINEERING ACHIEVEments of the Westinghouse Electric & Manufacturing Company for the Year 1923," has been recently prepared by H. W. Cope, Assistant Director of Engineering, Westinghouse Electric & Manufacturing Co., East Pittsburgh, Pennsylvania. Attention is directed in this publication to the steady extension of the uses of electricity, not only in new lines of work but in its more general use in proven fields. Under the heading, "Generation, Transmission and Distribution of Power," mention is made of some of the Westinghouse developments along these lines, as the needs of the country demand the construction of new generating stations of great capacity or the consolidation of systems where interchange of power is supplied. Electrical installations, as called for by the rubber industry, as well as others, are reviewed in this detailed and carefully prepared survey.

UNDER THE TITLE, "AS BLACK AS THE ACE OF SPADES," THE United Oil & Natural Gas Products Corporation, Monroe, Louisiana, is issuing a little illustrated booklet descriptive of the various activities at its plant, said to be the largest individual carbon black plant in the world. The chemical constituents of carbon black and its use in the manufacture of many and various products, including rubber tires, are described, while the future possibilities for the utilization of such a substance as carbon black are set forth in this publication as being almost limitless.

APPARENTLY COMPLETE INFORMATION REGARDING SIZES, PRICES, and methods of installation of Francke flexible couplings for direct-connected machines appears in a recent bulletin issued by Smith & Serrell, general sales agents of the Francke organization, with offices at Central avenue and Halsey street, Newark, New Jersey. The publication in question is well illustrated, and there are a number of tables of specifications.

ARRANGED IN THREE DIVISIONS THE "BUYERS' GUIDE-BOOK—1924 Edition" as published by Drug & Chemical Markets, 3 Park Place, New York, N. Y., is so prepared as to furnish a complete directory of the drug, chemical and allied industries. Price and market statistics, tabulations, and various items of trade information will be of interest to manufacturers, importers and dealers in chemicals, dyes, oils, pigments and allied products. One section of the publication, arranged geographically, lists American firms engaged in the industries mentioned, while another section contains an alphabetical list of products.

"RÉVUE GÉNÉRALE DES COLLOIDES." (FRENCH.) THE first number of this monthly review devoted to colloids and their industrial applications appeared November 1, 1923, published at 9 Rue Coëtlogen, Paris, edited by M. Dunod assisted by a committee of eminent French chemists and engineers.

The review will present each month original scientific articles, progress in industrial colloid applications, classified abstracts of all related important papers, books and patents arranged under 24 headings, among which appear caoutchouc, pigments, etc.

Recent Articles Relating to Rubber

L. S. Rubber—A New Crude Rubber. This paper gives a general description of the methods of making the standard crudes—fine Pará, pale crêpe, and smoked sheet. The apparatus for making sprayed rubber and the method of operation is described. The merits of sprayed rubber as brought out during a period of three years' testing are given and tables are shown which give analytical data and physical tests of sprayed rubber in comparison with fine Pará, pale crêpe, and smoked sheet. Sprayed rubber is uniform in quality, ages well in cured stocks, gives high tensile strength, cures quickly, and is of broad application in the manufacturing of rubber goods.—Ernest Hopkinson. *Industrial and Engineering Chemistry*, December, 1923, 1267-69.

Motor Vehicle Wheel Alignment. (Illustrated). In this paper the author explains the importance of accurate alignment as a factor essential to ease of steering, the safe and economical operation of an automobile, and improvement in tire service. A method of securing correct wheel alignment is given and the factors effecting it are discussed.—John F. Duby, *Journal of the Society of Automotive Engineers*, December, 1923, 453-460.

Action of Chloride of Calcium in the Coagulation of Latex of Hevea Brasiliensis. (French.) The author concludes that the phosphates soluble in latex in the presence of chloride of calcium decompose to form on the one hand phosphates of lime which remain incorporated in the rubber while the chlorine reacts on the albuminoid materials and causes coagulation. The increase of weight observed is due to the very rapid and complete coagulation by the chlorine, the inclusion of partly soluble mineral matters and the insoluble products of chlorine and albuminoids.—G. Vernet. *Comptes Rendue*, 175, 1922.

Concerning the Coagulation of Latex. (French.) Discussion of above paper comparing G. Vernet's results with his own, published in 1913 and 1914, on the coagulation of casein in milk.—L. Lindet. *Comptes Rendue*, 175, 1922.

On the Mercaptothiazols as Accelerators of Vulcanization. (Italian.) The authors have previously pointed out that the mercapto-benzothiazols in the presence of metallic oxides and their salts are powerful accelerators of vulcanization. The 5 methyl 2 mercaptothiazol is crystalline substance simply enough prepared. Added to the rubber mixing in the proportion of one to three per cent in the presence of metallic oxides it causes vulcanization in a very short time, about five minutes at 120 degrees C. and at ordinary temperatures in a longer time. Metallic salts of this compound are also excellent accelerators, principally the salts of zinc, but also those of cadmium, lead and mercury.—G. Bruni and E. Romani. *Atti. Accad. dei Lincei*, 86, 1922.

Costing in the Rubber Industry as an Essential Factor to Successful Production. A lecture discussing the meaning and value of correct and systematic cost accounting, the results achieved based on knowledge of actual production costs, and checking losses on labor, materials and defective manufacturing. Expense of instituting a comprehensive cost system is indicated and certain important phases are treated, including overhead charges, protecting secret formulæ, mass production and the sales department.—Claude A. Fryer. *Institution of the Rubber Industry.*

Application of Rubber Latex to Sizing Paper. By N. J. Dekker. **Determination of Rubber in Paper.** By A. Van Rossem and W. Frenzel.

The introduction of two per cent of latex into paper markedly increases its resistance to folding. The resistance to tearing depends primarily on the character of the fiber and the influence of rubber is relatively slight but more favorable than that of resin. The use of latex has very little effect on the stretch of the paper or on its hygroscopicity, although the latter is slightly reduced. The writing quality of the paper, however, is improved more effectively by resin than by rubber, a larger proportion of the latter being needed.—*Papier-Fabr.* 21, 1923.

Swelling of Caoutchouc. (German.) Maximum swelling of caoutchouc in organic liquids increases with increasing dielectric constant. Compounds containing halogens or sulphur have an increased swelling power. The position of carbon bisulphide in cold vulcanization is due to its unusually high swelling velocity, and to the fact that every vulcanizing agent is slowly active in it. Its swelling properties are inferior only to those of mercaptan; carbon tetrachloride is inferior to it in this respect, but this solvent has the advantage that vulcanization takes place slowly in it.—M. Le Blanc and M. Kröger, *Kolloid-Zeitschrift*, September, 1923.

Asbestine as Filler in the Rubber Industry. (German). Chemical and physical characteristics of asbestos, talc and asbestine compound and their technical values as rubber compounding ingredients indicated. Superiority of asbestine due to adsorption by the rubber of its colloidal salicic acid, which is more effectively accomplished by Ditmar's patented method by direct mixing of asbestine in rubber latex than by the old method of compounding asbestine by milling.—Dr. Rudolph Ditmar. *Chemiker-Zeitung*, November 24, 1923.

Spring Movement and Vibration Study of Cars in Action. (Illustrated). This study was made by means of a device, which is described, that combines a recording seismograph and a spring action recorder.

One of the important researches made with this instrument was in connection with a study of large section, low pressure tires. Considered purely from the standpoint of easy riding, these tires are a great success.—T. J. Little, Jr. *The Journal of the Society of Automotive Engineers.* December, 1923.

Dyeing Knitted Fabrics. Choice of dyes and finish desired for knitted fabrics for the rubber trade are referred to. Linings for rubber goods are not generally exposed to light and there is no need to dye for light fastness. They must be fast to acids, heat and sulphur. This makes sulphur colors the best choice. Cotton linings are dyed without much trouble, but the application of sulphur colors to unions has been a source of trouble for some time. The alkaline nature of the sulphide reacts on the wool and destroys it unless care and skill are used in handling it. Only those sulphur colors that are soluble in the smallest amounts of sulphide can be used successfully.—Herbert C. Roberts. *Textile World*, November 24, 1923.

Some Tensile Properties of Cotton Yarns.—This paper, read before the American Chemical Society, is No. 84 from the Department of Chemical Engineering, Massachusetts Institute of Technology, and is a report of an investigation to determine the effect of important variables, such as high moisture content, temperature, prolonged heating and fiber lubrication upon the tensile properties of cotton yarn.—Tyler Fuwa, *Textile World*, December 15, 1923.

Contribution to Colloid Chemistry of Vulcanization. (German.) The solubility of other substances in rubber, particularly sulphur, is discussed. Slight reactions only give elastic material. Sulphur and sulphur halogen bodies give best results in this connection. Formation of rubber from latex is discussed. Rubber characteristics can be altered in two ways, by disaggregation of its molecules by heat and milling, and by changes in elasticity effected by vulcanization and subsequent cooling off.—M. Kröger, *Kolloid-Zeitschrift*, November, 1923.

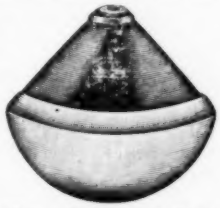
Some Observations on the Viscosity of Latex without and with Ammonia. Dr. O. de Vries. *Archief voor de Rubbercultuur*, October, 1923. 436-443. Graphs.

Rubber-insulated Wires. (French.) A. R. Matthis. *Le Caoutchouc et la Gutta-Percha*, November 15, 1923. 11976-77.

The Treatment of Powders in the Rubber Industry and the Like. (French.) L. Macré. *Le Caoutchouc et la Gutta-Percha*, November 15, 1923. 11977-79. Illustrations.

Molded Rubber Tank Ball with Copper Top

A new item of interest to hardware dealers is the rubber and copper tank ball illustrated. The bottom is made of one piece of high grade rubber, molded rather than blown, thus eliminating seconds. It is joined to the copper top in such a way that there is no bead whatever and the manufacturers claim that a perfect seat is assured in the valve, that it is absolutely airtight and will remain so indefinitely. The metal top is impervious to the action of acids and alkalis in the water, and the automatic method of assembling eliminates waste and cuts production cost to a minimum.—American Rubber Products Corporation, 37-41 Summer Avenue, Newark, New Jersey.



"Enamoltop" Tank Ball

Collapsible Pail and Funnel Combined

A new development in collapsible pails is designed to fold up so small that it will fit in the hip pocket but when opened out will hold one-half gallon of water. It is made of double-faced khaki-colored material heavily rubberized. All seams are strongly stitched and then rubberized, so that there is no chance of leaks. The metal clasp at the bottom of the pail is a special feature by means of which the contents are securely held or released through two inches of funnel into the radiator. Thus the chief difficulty of collapsible pails is overcome—that of pouring the water out.

The Velguth Collapsible Pocket Pail

A bottle or other vessel may be filled in the same way. Owing to the shape of the pail it is easy to fill it from shallow streams and to carry it without spilling the water.—Velguth Metal Parts, Milwaukee, Wisconsin.

Windshield Cleaner for Open or Closed Cars

The new type of windshield cleaner illustrated is mounted on top of the windshield by means of a bracket provided for the purpose, though the bracket is not required when the cleaner is mounted through the frame of the windshield as in closed cars. A single strip of very heavy rubber is employed, and all steel parts are Parkerized to prevent rusting. The knob, wiping arm, and the channel are of nickel plated brass. The cleaner is easily attached, no special tools being required, and it is adjustable to any size top windshield glass.—Tiffany Manufacturing Co., 50 Spring street, Newark, New Jersey.

Tiffany Model C

FIVE-AND-TEN-CENT STORES ARE FEATURING TABLES OF RUBBER bath sponges and using as an advertising device a sea-serpent about six feet in length, made entirely of rubber sponge with a thin surface coating sea-green in color.

Dimpled Tube Holds Air Regardless of Puncture

In the inner tube illustrated, about 300 depressions forming vacuums, or dimples, cause the tube to cling to the casing, thus preventing creeping of the tube and consequent friction. When the tube is inflated the air pressure forces the rubber in, the dimples outward against the walls of the casing, squeezing out the air and causing suction. Down to 30 pounds pressure the dimples will hold tightly to the casing and there is no internal heat generated. The compression of the rubber under inflation renders the tube leak-proof because the lining is a soft, plastic compound which oozes into the hole made by the withdrawal of the puncturing element and as this plastic compound cures under pressure it seals the punctured place and makes a permanent repair. The manufacturers claim that it is impossible to have a flat tire from punctures when this tube is in use.—Wolverine-Climax Co., 1120 Book Building, Detroit, Michigan.

Leak-Proof, Self-Healing Dimpled Tube

Rubber Taps That Hold the Shoe in Shape

The guarantee which the manufacturers of the non-skid rubber tap illustrated give to retailers is confidence-inspiring. The tap is made in black or tan, is waterproof, oil and acid proof and is strong enough to hold the shoe in shape. It wears down flat, does not "balloon" on the ball of the foot, will not squeak, and takes the stitch just like leather. It is claimed for it that it will outwear the best quality of leather.—Huntington Rubber Mills, Portland, Oregon.

Huntington Non-Skid Sole

THE CORAJA RUBBER CO. OF CALIFORNIA, SAN FRANCISCO, IS broadcasting very definite instructions for repairing punctures, blowouts, jerked-out valves, sand blisters, stone bruises, etc., as well as rim cuts, with their patented product "Coraja," which is a patch made up of rubber heavily reinforced with fabric, and which can be used for patching inside and outside of casings as well as for tubes.

A RUBBER EYE BATH, MARKETED BY GRIMES & CO., 39 CRAVEN Road, Lancaster Gate, London, W., England, has the advantage over glass or other eye baths of rigid material in that it may be carried about without danger of breaking and it fits more comfortably over the eye.

Activities of the Rubber Association of America

Annual Meeting

THE ninth regular annual meeting of the Rubber Association will be held in the Astor Gallery of the Waldorf-Astoria Hotel, 34th street and 5th avenue, New York, N. Y., at 2:00 P. M., Monday, January 7, 1924.

Firm and affiliated members should obtain information from the secretary of the association regarding the rules governing voting and proxies. Seven new directors will be balloted for at this meeting.

An innovation will be brief talks by leaders in the industry on present-day conditions in the rubber trade, when an opportunity will be afforded those present to indulge in a general discussion of the thoughts presented. Following is a schedule of the annual divisional and committee meetings to be held in conjunction with the annual meeting of the association:

Annual Meetings of Divisions and Committees

MONDAY—JANUARY 7

Organization	Location	Time
Rubber Reclaimers' Division	Yale Club	11:00 a. m.
Hard Rubber Division	Yale Club	10:00 a. m.
Rubber Clothing Division	Yale Club	10:00 a. m.
Footwear Division	Union League Club	12:00 m.
Foreign Trade Division	Yale Club	10:00 a. m.
Cycle Tire Committee	Yale Club	10:30 a. m.

TUESDAY—JANUARY 8

Mechanical Rubber Goods Division	Yale Club	10:00 a. m.
Executive Tire Committee	Yale Club	10:00 a. m.
Tire Manufacturers' Division	Yale Club	1:00 p. m.
Toy Balloon Section	Yale Club	10:00 a. m.
Rubber Glove Section	Yale Club	12:00 m.
Rubber Sundries Manufacturers' Division	Yale Club	1:00 p. m.
Rubber Proofers' Division	Yale Club	11:00 a. m.
Auto Fabric Manufacturers' Division	Yale Club	1:00 p. m.

WEDNESDAY—JANUARY 9

Service Managers' Committee	Yale Club	10:00 a. m.

Luncheon will be served in connection with each of the meetings named.

The annual meetings of the Accounting Committee, the Mechanical Goods Specification Committee and the Traffic Committee will be held about the middle of January.

Annual Dinner

The twenty-fourth annual dinner will be held at the Waldorf-Astoria Hotel, Fifth avenue and Thirty-fourth street, New York, N. Y., on January 7, 1924, at 7 P. M.

Members and friends are cordially invited to be present. Those members desiring table reservations or special seating arrangements should promptly address the secretary, 250 West 57th street, New York, N. Y.

December Meetings

A meeting of a sub-committee of the Hard Rubber Manufacturers' Division was held at the Yale Club, New York, N. Y., on December 14, to prepare uniform tests for hard rubber radio sheet, in connection with the efforts of the division to establish minimum quality standards for such goods. Material progress was made and the sub-committee hopes to be able to submit definite recommendations to the division early in January. This action is in conjunction with an educational campaign emphasizing the advantages of hard rubber over other materials commonly used in radio work.

The Specification Committee of the Mechanical Rubber Goods Manufacturers' Division held a regular meeting at the Yale Club, New York, on December 18. A very interesting discussion was had with P. L. Wormeley, chairman of the Rubber Goods Committee of the Federal Specifications Board, at Washington, concerning the present status of the tentative Federal requirements for packings and the extent to which individual departments of the government are adhering to the board's approved specifications for rubber hose, which were jointly formulated by the Specification Committee and Mr. Wormeley's Committee.

The committee also gave its attention to the specifications issued by individual railroads throughout the country which are at variance with the "recommended practice" standards of the American Railroad Association, with a sub-committee of which the Rubber Association body has been coöperating for the past three years. The members present at this session indicated that the carriers are gradually adopting the A. R. A. requirements, which should prove beneficial to not only the railroads but the manufacturers as well, as it is fundamental that the use of standard requirements by purchasers who buy such large quantities of rubber hose and belting is a much more desirable and economic condition than has prevailed in the past, when each and every railroad had its own individual and distinct specifications.

The Executive Committee of the Tire Manufacturers' Division held its December regular meeting at the Lotos Club, New York, on December 19. The standardization of oversize low pressure tires for existing standard rims was discussed and it is expected that a definite recommendation thereon will be issued to members of the division in the very near future.

There were three subjects referred to the Tire & Rim Association for consideration and its recommendations, namely: A schedule of load carrying capacities and inflation pressures for balloon tires; the standardization of inner tube valves; and the replacing of the 26 by 3-inch motorcycle rim contour by the 3-inch passenger car rim contour.

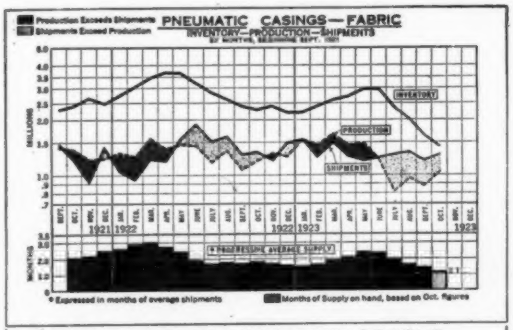
The Executive Committee approved the plan to enlarge the Service Managers' Committee to embrace a larger number of individuals connected with members of the division, which it is believed will assist in strengthening the support accorded to the standard tire warranty. The Service Managers' Committee as a whole will doubtless meet quarterly, while an executive committee thereof will meet monthly.

The Service Managers' Committee presented recommendations for the further improvement in adjustment conditions, which are endorsed in principle by the Executive Committee and returned to the service men for a definite program, which will be considered at the annual meeting of the Tire Manufacturers' Division scheduled to be held at the Yale Club, New York, on Tuesday, January 8, 1924, the day following the annual meeting and dinner of the Rubber Association.

The Executive Committee was informed of the approval of the Board of Directors of the association of the plan to make a survey of tire dealers' inventories as of April 1, 1924, and plans will be made immediately to progress this work. The committee was informed that the National Tire Dealers' Association has indicated a desire to confer with a committee representing the Tire Manufacturers' Division respecting the resolutions adopted at the Fourth Annual Convention held in New York in November. The chairman was authorized to appoint a sub-committee to discuss the resolutions with the dealers' organization.

UNITED STATES IMPORTATIONS FROM BRAZIL OF CRUDE RUBBER FOR the twelve months ended December 31, 1922, are estimated at 25,008,853 pounds, with a value of $3,186,241. This represents an advance, and compares favorably with the corresponding imports of the twelve months previous, amounting to 23,274,281 pounds, valued at $2,753,615.

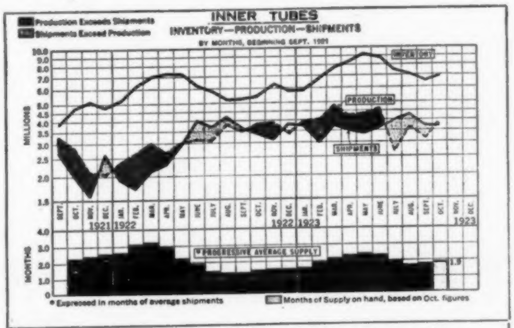
Rubber Association Monthly Tire Statistics



Total Shipments	Production	Inventory
1,447,516	1,399,424	2,238,576
1,217,883	1,351,321	2,387,566
916,101	1,289,379	2,630,641
1,400,094	1,224,623	2,440,456
1,840,475	1,280,715	2,759,431
950,105	1,266,397	3,079,854
1,197,328	1,544,980	3,414,922
1,172,218	1,369,631	3,636,080
1,548,858	1,469,857	3,600,231
1,658,378	1,456,782	3,153,971
1,511,542	1,161,965	2,825,765
1,508,474	1,351,617	2,584,123
1,278,170	1,079,125	2,410,604
1,329,850	1,281,520	2,316,056
1,282,618	1,380,686	2,410,600
1,477,006	1,261,459	2,185,585
1,538,814	1,518,381	2,211,440
1,249,468	1,454,224	2,400,065
1,582,822	1,467,083	2,552,939
1,275,671	1,452,709	2,765,897
1,212,900	1,472,544	2,970,766
1,229,324	1,184,431	2,944,455
1,281,821	819,847	2,382,271
1,319,615	963,728	2,034,731
1,214,777	860,441	1,663,823
1,278,975	1,042,503	1,434,291

PERCENTAGES OF INCREASE OR DECREASE FOR OCTOBER, 1923 COMPARED WITH SEPTEMBER AND WITH OCTOBER, 1922

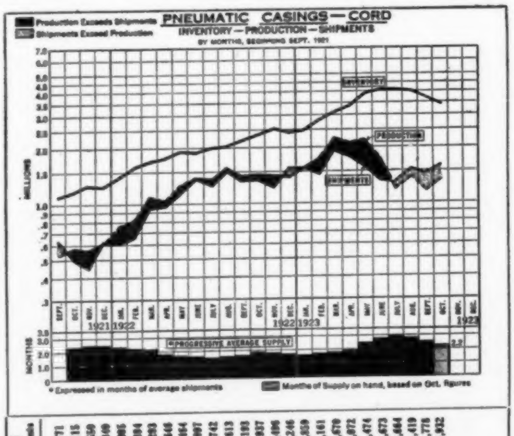
Fabric Casings	Compared with September	Compared with Oct., 1922
Inventory, shows	a decrease of 13.8%	a decrease of 38.1%
Production, shows	an increase of 21.2%	a decrease of 13.2%
Total shipments, show......	an increase of 5.1%	a decrease of 4.0%
Original equipment, shows..	an increase of 12.8%	an increase of 55.2%
Other sales, show..........	an increase of 0.3%	a decrease of 25.8%
Export, shows	a decrease of 25.7%	a decrease of 55.3%



Total Shipments	Production	Inventory
2,664,277	2,274,822	3,827,830
2,038,967	2,843,918	4,732,016
1,553,004	2,126,211	5,203,568
2,555,337	2,070,098	4,731,021
1,913,776	2,343,303	5,240,647
1,732,316	2,596,774	6,141,956
2,135,975	3,017,511	6,991,118
2,371,623	2,650,573	7,239,006
2,996,450	2,970,896	7,180,552
4,043,301	3,130,629	6,186,534
3,678,707	3,848,199	5,675,839
4,299,461	3,808,224	5,307,228
3,597,929	3,501,442	5,164,757
3,463,597	3,787,758	5,408,033
3,123,597	3,350,908	6,210,053
3,097,404	3,411,074	5,732,125
3,818,131	3,951,865	5,838,310
3,863,083	4,039,202	6,771,958
3,910,542	4,075,414	7,740,945
3,618,495	4,250,558	8,304,104
3,408,394	4,317,537	9,202,223
3,661,527	3,590,011	8,924,326
4,030,253	2,666,354	7,527,281
4,350,329	3,577,922	6,950,578
3,724,724	3,254,575	6,457,455
3,635,856	3,855,244	6,898,425

PERCENTAGES OF INCREASE OR DECREASE FOR OCTOBER, 1923 COMPARED WITH SEPTEMBER AND WITH OCTOBER, 1922

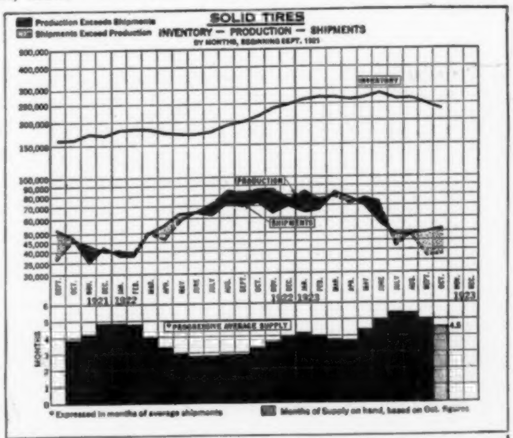
Inner Tubes	Compared with September	Compared with Oct., 1922
Inventory, shows	an increase of 6.8%	an increase of 25.7%
Production, shows	an increase of 18.5%	an increase of 1.8%
Total shipments, show......	a decrease of 2.4%	an increase of 5.0%
Original equipment, shows..	an increase of 11.1%	an increase of 48.5%
Other sales, show..........	a decrease of 7.1%	a decrease of 6.3%
Export, shows	a decrease of 2.5%	a decrease of 6.5%



Total Shipments	Production	Inventory
634,771	529,844	1,102,222
501,115	576,980	1,177,464
448,550	556,178	1,277,781
623,840	615,115	1,248,063
805,085	754,419	1,423,705
657,894	817,911	1,611,475
938,293	1,100,920	1,708,384
947,646	1,031,584	1,838,254
1,157,464	1,251,616	1,932,864
1,352,997	1,382,098	1,986,178
1,230,742	1,314,671	2,080,321
1,526,613	1,553,582	2,045,209
1,277,193	1,425,610	2,201,420
1,320,937	1,473,142	2,366,902
1,233,496	1,432,448	2,554,286
1,553,246	1,395,483	2,413,615
1,546,959	1,666,999	2,464,528
1,426,161	1,763,783	2,816,302
1,824,670	2,198,643	3,117,442
1,904,072	2,006,617	3,382,375
1,631,474	2,187,442	3,985,828
1,346,673	1,772,512	4,096,146
1,315,464	1,173,142	4,100,853
1,532,419	1,300,783	4,026,149
1,457,778	1,109,140	3,733,734
1,588,932	1,318,837	3,442,061

PERCENTAGES OF INCREASE OR DECREASE FOR OCTOBER, 1923 COMPARED WITH SEPTEMBER AND WITH OCTOBER, 1922

Cord Casings	Compared with September	Compared with Oct., 1922
Inventory, shows...........	a decrease of 7.8%	an increase of 45.4%
Production, shows	an increase of 12.8%	a decrease of 10.5%
Total shipments, show	an increase of 9.0%	an increase of 20.3%
Original equipment, shows..	an increase of 12.8%	an increase of 41.9%
Other sales, show	an increase of 7.4%	an increase of 13.1%
Export, shows	an increase of 7.9%	an increase of 4.9%



Total Shipments	Production	Inventory
52,830	37,441	161,832
48,047	46,274	163,299
35,387	43,537	173,451
41,570	49,478	168,515
38,565	48,224	181,709
38,536	39,492	183,448
50,092	49,433	182,197
54,302	46,684	173,748
62,940	57,640	170,904
65,995	66,080	169,808
62,383	71,565	176,375
72,643	84,313	189,808
69,912	82,767	200,016
74,379	85,480	213,942
64,396	85,775	234,604
60,742	77,221	244,061
65,711	83,343	262,442
67,804	75,457	270,191
82,405	79,708	265,843
76,294	71,466	260,431
71,114	77,288	268,383
56,170	72,445	283,425
49,126	42,345	283,881
49,718	48,141	262,819
49,667	37,074	249,379
51,604	37,285	234,946

PERCENTAGES OF INCREASE OR DECREASE FOR OCTOBER, 1923 COMPARED WITH SEPTEMBER AND WITH OCTOBER, 1922

Solid Tires	Compared with September	Compared with Oct., 1922
Inventory, shows..........	a decrease of 5.8%	an increase of 9.8%
Production, shows	an increase of 0.6%	a decrease of 56.4%
Total shipments, show.....	an increase of 3.9%	a decrease of 30.6%
Original equipment, shows..	an increase of 19.7%	a decrease of 11.9%
Other sales, show..........	a decrease of 3.4%	a decrease of 41.5%
Export, shows	a decrease of 4.2%	an increase of 14.0%

Explanatory Note—These charts are believed to be simple and intelligible, requiring but little explanation. The shading effect between the production and shipment curves draws attention to the important relation of production and shipments. The heavy shading shows that production exceeds shipments, while the dotted effect indicates that production is less than shipments. The cumulative effect of the shading is reflected in the changes simultaneously taking place in the inventory curves.

The lower section of each chart is designed to show to what extent the industry is stocked at the end of each month; that is, the number of months' supply on hand to meet the average monthly requirements. The inventory at end of each month is divided by the shipments for that month, and this gives us the number of months' supply on hand, assuming the shipments per month will remain the same. But because this value is quite changeable, three months' values are averaged to obtain a value that is a trend and a reliable indicator. Therefore, each solid bar is an average of the three months' figures of which it is the center. This is what has been designated as the Progressive Average Supply.

The number, together with the shaded bar appearing on the extreme right in each case, represents the number of months' supply on hand based only on the figures for the latest month available.

Annual Banquet of the Rubber Trade Association

THE annual banquet of the Rubber Trade Association of New York, Inc., was held at the Biltmore Hotel, New York, N. Y., on the evening of December 12, 1923.

Having passed a most precarious year, representatives of the New York crude rubber trade gathered together once more with hopeful optimism in the future. One hundred and seventy-five members and guests were present and thoroughly enjoyed the menu, the music and excellent addresses.

Charles T. Wilson, President Rubber Trade Association

Following the dinner, President Charles T. Wilson spoke briefly regarding the association and its accomplishments beneficial to the trade. Then with appropriate remarks he introduced W. O. Rutherford, vice president of The B. F. Goodrich Co., and president of the Rubber Association of America. The speaker informally related how his association through cooperation with the automotive industry had greatly benefited the rubber industry. Manufacturing and sales practices must be revised, he said, to meet the ensuing demand for reliable goods at a fair price. Adjustment of present conditions, particularly in the tire industry, must be made to this end. He believed that 1924 will record a substantial increase in business over that of 1923: that sound business principles and unselfish cooperation will hasten the coming prosperity in the rubber industry.

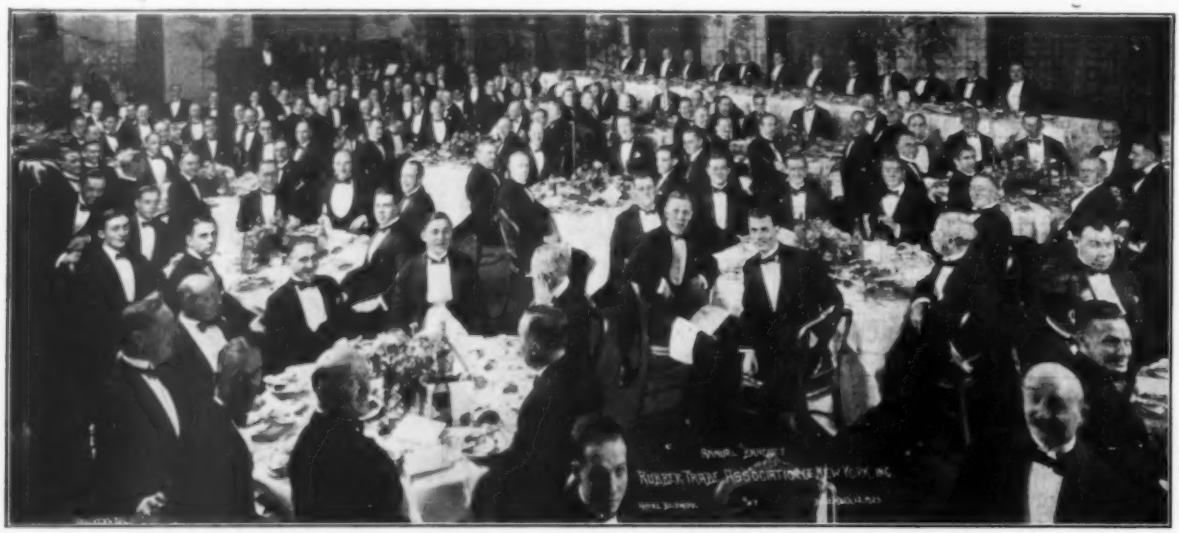
J. Joyce Broderick, commercial counsellor to the British Embassy, whose broad-minded policy in handling the British control of crude rubber during the war is well remembered in the trade, was speaker of the evening. He said in part:

"It is a pleasure to be brought once more into friendly contact with members of this association, from whom I received such admirable cooperation during the war. The helpful attitude of the American rubber trade during that time was exemplified by the work of the present chairman, Mr. Wilson, who had energetically upheld the interests of the United States, without impairing those of the belligerent countries. This made possible the smooth and effective working of a 'gentlemen's agreement' under which supplies of rubber came forward in quantities adequate to the needs of American industry. It would be a pity if these lessons were to be lost and I feel that the need for cooperation and mutual confidence was never greater than at present.

"Quite recently there has been much public discussion of another set of British restrictions—the curtailment of rubber in British Malaya and Ceylon. The purpose of those restrictions was to protect investors from such serious losses as would destroy the investment or lead to heavy withdrawal of capital from the plantations. These measures have been criticized as unwarranted interference with the law of supply and demand. If 'interference' means the artificial limitation of either supply or demand, it is quite correct so to describe the restrictions: but artificial limitation of supply or demand is by no means new. It would be difficult to find a case in which the working of the law could be said to have absolutely free play. Examples of such limitation are to be found, for instance, in the reduction of cotton and of wheat acreage, in protective tariffs and in numerous other ways. Curtailment of output as an expedient to meet the emergency which has long prevailed in the rubber growing industry has not been discovered by the Stevenson Committee." It was fair, the speaker thought, to mention that Great Britain, as shown by her economic history for nearly three quarters of a century, had done much less than any other country to interfere with the free operation of the law of supply and demand.

Mr. Broderick referred to the reasonable attitude adopted towards these measures by the American rubber trade as a whole, and he assured his audience that the restrictions would be applied sincerely and impartially so as to disturb trade as little as possible.

The best work of the diplomatist, Mr. Broderick observed, attracted little public attention. The daily press laid its chief emphasis on the failures of diplomacy; but the world as a whole, and the business world in particular, was more concerned with the clearing away of international misunderstandings and facilitating the free commercial intercourse that forms the surest safeguard of enduring peace. In that unobtrusive but highly important work, the rubber trade of the United States had already played a great part and would play an even more prominent part in future years.



Annual Banquet of the Rubber Trade Association of New York, Inc.

Captain Irving O'Hay, a soldier of many wars and a humorous story teller of his own experiences, was the last speaker. This bright and witty address delivered with characteristic manner held the audience either spellbound with interest or rocking with laughter, and closed one of the most interesting dinners ever held by the association.

Peters Brothers Rubber Co.

The Peters Brothers Rubber Co., Inc., manufacturer of shoe fabrics, adhesive tapes and backing cloths, New York, N. Y., has removed from the Peters Building, at 4109-4119 Park avenue, to a new factory in Brooklyn. This latter building is a concrete and steel structure located at 160-168 John street, near one of the most important metropolitan freight terminals and at the ends of two bridges, and is completely equipped for the highly specialized line of manufacture in which the firm is engaged.

The business is conducted by George L. Peters and William F. Peters, Jr., both engineers and graduates of the School of Applied Science, Columbia University, who constitute the third generation of the Peters family, so long and favorably known in the shoe fabric trade. It is the outgrowth of the business founded on High street, Boston, Massachusetts, half a century ago by the late Anthony Peters. The firm became Anthony Peters & Son when William F. Peters, Sr., attained his majority, and the present company, incorporated in 1917, still enjoys the counsel of his long experience.

In the days of Anthony Peters, the balata-gutta percha tissue or film called "sheet rubber" by many, which was used in combining cloths and in the manufacture of backing cloths, was imported from Germany. Later, to avoid the tariff duty, the Germans built a factory near New York. It was the ambition of William F. Peters, Sr., to make tissue manufacture a successful American industry. This ambition was also shared by his sons, who, by specialization and achievement, have laid the foundations of a growing business in their new plant.

Owing to small volume in the adhesive backing cloth industry, machinery manufacturers devoted little thought to gutta percha machinery. At first the best available rubber machinery was tried, but had to be discarded as unsuitable. Determined to produce new things with new machinery and new methods, in harmony with the world's scientific progress, the young engineers developed new processes and superior appliances of their own.

Today they manufacture a soft, tenacious backing cloth in one operation, as against the three operations formerly necessary, the great saving in labor being put into quality. The same is true of their new inner soling. Probably their best contribution to this branch of the trade has been the adoption of the cord tire principle to white shoe cloths. The threads are so twisted, spaced, laid, adjusted, and imbedded that the new cloth, at half the cost, is said actually to outwear the old.

RETURN CENSUS REPORT PROMPTLY

The Bureau of the Census is now engaged in collecting statistics of manufactures covering the calendar year 1923. These statistics are compiled in accordance with the Act of Congress of March 3, 1919, and the schedules have been prepared after conference with the associations and others interested in the various industries. The schedules were mailed to the manufacturers on January 2 and the Director of the Census is very anxious to publish the statistics at the earliest possible date in order that they may be of the greatest possible commercial value. Rubber manufacturers are urgently requested to forward their reports to the bureau at the earliest possible date, preferably before the end of January. The bureau has agreed to tabulate the results as rapidly as the schedules are received and publish the totals within a few days after the receipt of the last report.

New Incorporations

Booth-Brown Tire Co., October 1 (South Carolina), $5,000. E. S. Booth, president and treasurer; R. T. Brown, vice president and manager; E. S. Booth, Jr., secretary. Principal office, 22-24 East Liberty street, Sumter, South Carolina. To deal in automatic tires and accessories.

Co-operative Tire Manufacturing Co., October 3 (North Carolina), $25,000. C. E. McCallum; M. C. McIver; H. S. Hale; A. E. Kelly; H. S. Wilburn; S. L. McBee, Jr., all of Wilmington, North Carolina. Principal office, Wilmington, North Carolina. To manufacture automobile tires and other rubber products.

Delaware Nash Motors Co., November 8 (Delaware), $25,000. E. McNeal Shannahan; W. B. Shannahan; S. Harry Shannahan, all of Easton, Maryland. Principal office, with Philip L. Garrett, 901 Market Street, Wilmington, Delaware. To manufacture tires, automobile supplies and accessories, etc.

Eisenkramer & Erlich, Inc., November 12 (New York), $50,000. Oskar Eisenkramer, president and director; Jacob Erlich, vice president and treasurer, both of Chappaqua, New York. Principal office, 457 Broome street, New York City. Rubber specialties.

Elastic Ballet Shoe Co., November 30 (Maine), $10,000. Francis A. Mills, president; Charles O. Hall, treasurer, both of Lynn, Massachusetts; Elmer J. Burham, Clerk, Kittery, Maine. Principal office, Kittery, Maine. To manufacture shoes and slippers

Goodyear-Zepplin Corporation, The, December 14 (Delaware), 30,000 shares without nominal or par value. T. L. Croteau; M. A. Bruce; A. M. Hooven, all of Wilmington, Delaware. Principal office, with the Corporation Trust Company of America, duPont Building, Wilmington, Delaware. To manufacture dirigible airships, commonly known as Zeppelins.

Great Northern Tire Co., The, October 22 (Texas), $55,000. Harris Alexander, president; F. Alves, vice president; G. Heiman, treasurer; C. G. Groos, secretary. Principal office, 735 East Houston street, San Antonio, Texas. To carry on a wholesale and retail tire business and vulcanizing.

Jones-Howlett Rubber Co., December 17 (New York), $25,000. Maurice P. Jones, 20 Bode street, Elmhurst, Long Island, New York; Eric Howlett, 32 Broadway, New York City; Harry A. Yerkes, Jr., 49 Wall street, New York City. Principal office, Astoria, New York. To manufacture rubber articles.

Mid-Continent Rubber Co., November 23 (Delaware), $5,000,000. Preferred, par value $100; 50,000 shares of common stock without nominal or par value. T. L. Croteau; M. A. Bruce; A. M. Hooven, all of Wilmington, Delaware. Principal office, with the Corporation Trust Company of America, duPont Building, Wilmington, Delaware. To manufacture and deal in rubber, rubber cement and rubber goods of all kinds.

Modesty Panel Co., December 5 (Delaware), 1,000 shares without nominal or par value. T. L. Croteau; M. A. Bruce; A. M. Hooven, all of Wilmington, Delaware. Principal office, with the Corporation Trust Company of America, duPont Building, Wilmington, Delaware. To manufacture and deal in corsets, panels, girdles, supporters and apparel of a similar nature.

O. K. Truck Tire Co., Inc., December 6 (New York), $5,000. Walter Schulze and Anna H. Schulze, both of 112 Wallabout street, Brooklyn, New York; Edward I. Goodman, 132 Nassau street, New York City. Principal office, Brooklyn, New York.

Pennant Tire & Rubber Co., Inc., December 18 (New York), $200,000. Arthur Zimmerman, 115 Wadsworth avenue, New York City; Arthur M. Levy, 945 Whitlock avenue, Bronx, New York; J. C. Robb, 389 3rd avenue, New York City. Principal office, Manhattan. To manufacture rubber tires, tubes, etc.

Wm. C. Reynolds, Inc., December 17 (New York), $10,000. Andrew McEvoy, Oyster Bay, Long Island, New York; Abraham Silverstein, 474 West 150th street, New York City; Herman H. Lapides, 49 Decatur street, Brooklyn, New York. Principal office, Manhattan. To carry on a rubber goods business.

Standard Non-Slip Safety Tread Co., December 8 (New Jersey), $100,000 divided into 1,000 shares of a par value of $100 each. John J. Fagan, Jersey City, New Jersey; Frank A. Bandholz, Brooklyn, New York; Joseph Kahrs, West Orange, New Jersey. Principal office, corner of Coles and Fourteenth streets, Jersey City, N. J. To manufacture various devices to be installed on stairways, floors and other places, in order to make them safe places to tread upon.

Star Metallic Tire Co., November 19 (Delaware), $25,000, par value $10.00. Wilber A. McCoy, Pittsburgh, Pennsylvania; W. I. N. Lofland, Dover, Delaware; Frank Jackson, Dover, Delaware. Principal office, with the Capital Trust Company of Delaware, Dover, Delaware. To manufacture and deal in tires for motor driven vehicles.

Stertzer & Blair, Inc., November 22 (New Jersey), $100,000. Henry G. Stertzer, Hackensack, New Jersey; Myers H. Blair, River Edge, New Jersey; Susan Haefner, Carlstadt, New Jersey. Principal office, 342 Main street, Hackensack, New Jersey. To manufacture, buy, sell and deal in boots, shoes, leather and rubber goods.

Uneeda Rubber Heel Co., December 11 (New Jersey), $100,000. Robert Baron, 403 Grove street, Jersey City, New Jersey; Max Edelsack, 11th street, corner Hoboken Road, Carlstadt, New Jersey; Max Baron, 1653 Bath avenue, Brooklyn, New York; Louis Edelsack, 1106 College avenue, New York City. Principal office, Eleventh street, corner Hoboken Road, Carlstadt, New Jersey. To manufacture rubber boots, shoes and heels, and rubber goods.

Walton-Pilgrim Co., November 30 (Delaware), $100,000, par value $100. F. R. Hansell, Philadelphia, Pennsylvania; E. M. MacFarland, Camden, New Jersey; J. Vernon Pimm, Philadelphia, Pennsylvania. Principal office, with the Corporation Guarantee & Trust Co., Ford Building, Wilmington, Delaware. To manufacture and deal in automobile tires, tubes and accessories of all kinds.

ANNUAL DINNER OF M. A. M. A.

Annual banquet of the Motor and Accessory Manufacturers' Association will be held January 9, at the Hotel Astor, New York, N. Y. Dinner and entertainment will be followed by dancing and a large attendance is anticipated.

News of the American Rubber Trade

Financial

Dividends Declared

Company	Stock	Rate	Payable	Stock of Record
Canadian Consolidated Rubber Co.	Pfd.	1½% q.	Dec. 31	Dec. 17
Firestone-Apsley Rubber Co...	Pfd.	3½% c. a.	Jan. 1, 1924	Dec. 28
Firestone Tire & Rubber Co....	....	$1.00	Jan. 21, 1924	Jan. 10
Firestone Tire & Rubber Co...7% Pfd.		$1.75 q.	Jan. 21, 1924	Jan. 10
Firestone Tire & Rubber Co...6% Pfd.		$1.50 q.	Jan. 21, 1924	Jan. 10
General Tire & Rubber Co.....	Pfd.	1¾% q.	Jan. 1, 1924	Dec. 29
General Tire & Rubber Co....6% Spl.		.....	Dec. 20,	Dec. 12
Goodyear Tire & Rubber Co..8% pr. Pfd.		2% q.	Jan. 1, 1924	Dec. 20
Goodyear Tire & Rubber Co. of Canada	Pfd.	1¾% q.	Jan. 2, 1924	Dec. 20
Hood Rubber Co.	Com.	3% q.	Jan. 31, 1924	Jan. 15
India Tire & Rubber Co.	Pfd.	1¾% q.	Jan. 1, 1924	Dec. 11
India Tire & Rubber Co.	Com.	1% q.	Jan. 1, 1924	Dec. 11
Kelly-Springfield Tire Co.....6% Pfd.		$1.50 q.	Jan. 2, 1924	Dec. 17
Overman Cushion Tire Co..... X Pfd.		1½%	Jan. 20, 1924	
Overman Cushion Tire Co.	Com.	1½%	Jan. 20, 1924	
Paul Rubber Co.	Com.	10%	Jan. 10, 1924	Dec. 31
Paul Rubber Co.	Pfd.	2%	Jan. 10, 1924	Dec. 31
United States Rubber Co.....1st Pfd.		2% q.	Jan. 31, 1924	Jan. 15

New York Stock Exchange Quotations

December 22, 1923

	High	Low	Last
Ajax Rubber, com.	6½	5⅜	6
Fisk Rubber, com.	8½	7	7⅜
Goodrich, B. F., Co., com.	22⅞	20⅝	21
Goodrich, B. F., Co., pfd. (7)	75⅜	74	74
Goodyear Tire & Rubber, pfd.	41	39	39
Goodyear Tire & Rubber, prior pfd. (8)	91	88½	88½
Kelly-Springfield Tire, com.	32⅜	30	31⅞
Kelly-Springfield Tire, pfd. (8)	85⅞	84	84
Kelly-Springfield Tire, pfd. (6)	73½	73½	73½
Keystone Tire & Rubber, com.	3	2¾	2⅞
Lee Rubber & Tire, com.	14½	14	14
United States Rubber, com.	38½	35⅞	36⅞
United States Rubber, 1st pfd. (8)	90⅛	86	87½

Akron Rubber Stock Quotations

Quotations of December 22, supplied by App-Hillman Co., Akron, Ohio:

	Last Sale	Bid	Asked
American com.	7¾	7½	10
American pref.	50	....	35
Amazon com.	1¾	1½	2¼
Firestone com.	70⅜	58	70
Firestone 6% pref.	92½	92½	93
Firestone 7% pfd.	89½	89	89¾
General com.	153	150	155
General 7% pfd.	94⅝	97	....
Goodrich 6½s	97½	97	97⅝
Goodyear com.	8¾	8¾	9⅛
Goodyear 7% pfd.	39	38½	39¾
Goodyear 1st Mtg. 8s	114⅝	114⅜	115
Goodyear Deb. 8s	101⅜	101¼	101½
India com.	66	65	70
India 7% pfd.	80	75	82
Mason com.	1½	1½	1¾
Mason 7% pfd.	14½	14½	15¼
Marathon com.	2	....	2
Miller com.	69	69	70
Miller 8% pfd.	95	93	95
Mohawk com.	6	4	8
Mohawk 7% pfd.	40	40	....
Rubber Products	20	10	16
Seiberling com.	4½	4¼	4¾
Seiberling 8% pfd.	35	33	41
Star com.	9¾	....	15
Star 8% pfd.	80	....	80

The General Tire & Rubber Co.

The General Tire & Rubber Co. will report this year net earnings of approximately $1,000,000 after charges, but before Federal taxes, according to officials. This is equivalent to more than $40 a share on the 19,830 shares of $50 par value common stock outstanding, after preferred dividend requirements. In the year ended December 31, 1922, General reported net earnings before taxes of $1,076,404, equivalent to approximately $46 a share on the present amount of common stock outstanding. An extra 6 per cent dividend on common stock was announced. Last December a stock dividend of 100 per cent was declared.

The Fisk Rubber Company

The Fisk Rubber Co.'s fiscal year has been changed to end October 31 and balance sheet and profit and loss account for the ten months ending on that date show net sales of $44,862,743, with operating profits after depreciation but before interest of $3,810,881, and after interest and other charges of $2,513,613, carrying to surplus after setting aside $500,000 for contingent liabilities prior to 1923 the sum of $2,083,613, which compares with a corresponding period in 1922 with net sales of $38,516,661, showing an increase of 16.5 per cent and an increase in operating profits of $1,179,598, or 44.8 per cent.

The balance sheet shows current assets of $23,108,455 and current liabilities of $3,607,560, a ratio of current assets to current liabilities of 6.4 to 1. Inventories are priced at cost or market, whichever is lower, and the cash position materially improved, with cash on hand more than sufficient to liquidate all loans payable.

Profit and loss, surplus account and comparative balance sheet follow:

PROFIT AND LOSS AND SURPLUS ACCOUNT

FOR TEN MONTHS ENDED OCT. 31, 1923

Gross sales, less return and allowance		$44,862,744
Cost of sales, including depreciation, selling and administration expenses		41,051,863
Operating profit		$3,810,881
DEDUCT		
Interest paid net	$1,068,170	
Amortization of discounts, etc.	92,329	
Premiums and commissions on bonds purchased for retirement	33,276	
Stamp tax assessment for issue of common stock	33,493	1,227,268
Net profit after interest and financing charges		2,583,613
Appropriation for reserves for Federal Taxes and other contingencies prior to 1921		500,000
Net additions to surplus for the period		2,083,613
Surplus December 31, 1922		3,528,494
Balance sheet surplus October 31, 1923		$5,612,107

COMPARATIVE BALANCE SHEET

ASSETS

CAPITAL ASSETS	Dec. 31, 1922	Oct. 31, 1923
Land, buildings, machinery and equipment depreciated	$17,615,236.57	$17,837,021
Goodwill	1.00	1
Liberty bonds held in trust	.....	153,017
Investments	3,923,215.93	3,980,798
Treasury stock	49,354.75	.....
CURRENT ASSETS		
Inventories	13,520,790.75	13,897,915
Accounts and notes receivable less reserve	9,082,096.53	6,481,759
Cash in banks, on hand and in transit	2,495,733.18	2,728,781
Total current assets	25,098,620.46	23,108,455
Deferred charges	1,564,719.68	1,753,507
Total assets	$48,256,139.39	$46,832,799

LIABILITIES

CAPITAL STOCK	Dec. 31, 1922	Oct. 31, 1923
7% cumulative first preferred	$18,951,500.00	$18,951,500
Management stock	15,000.00	15,000
7% cumulative second preferred	2,120,700.00	1,113,300
Common stock	6,501,445.91	7,508,845
Total capital stock	27,588,645.01	27,588,645
First mortgage 20-year 8% sinking fund gold bonds	9,500,000.00	8,894,000
CURRENT LIABILITIES		
Loans payable	5,136,000.00	1,500,000
Accounts payable	1,761,578.64	1,987,560
Accrued bond interest	253,333.34	120,000
Total current liabilities	7,149,911.98	3,607,560
Reserve for insurance liability assumed by company	120,000.00	120,000
Reserve for contingencies	369,088.87	1,010,487
Surplus	3,528,493.53	5,612,107
Total liabilities	$48,256,139.39	$46,832,799

The Firestone Tire & Rubber Co.

The recent annual report of the Firestone Tire & Rubber Co., Akron, Ohio, for the fiscal year ended October 31, 1923, reveals the remarkable progress made during the past year by this organization, which showed sales of $77,583,150, an increase of 20 per cent over the previous year, returning a net profit of $6,104,992 after providing for depreciation, taxes, interest and other charges. After paying preferred dividends and all other charges the common stock equity increased over $13 per share.

One of the outstanding features of the company's financial statement is the reduction in bank indebtedness. On October 31 this year the company owed $5,770,000 as compared with $12,775,000 in 1922, $21,680,000 in 1921 and $31,335,000 in 1920. These figures reflect forcibly the financial progress made by the Firestone company during the most difficult three years ever encountered by the rubber industry. The Firestone company increased its sales by units more than 30 per cent this year over the boom year of 1920; its average daily production of 26,000 tires was 20 per cent more than in 1922. In connection with the increase in sales volume attention is called to the fact that the tire consumer was paying 100 per cent more in 1920 than he is today.

The Rubber Trade in the East and South

Manufactured Goods

The large volume of orders for raw materials, other than fabrics, placed for deferred early shipment indicates increase of rubber goods manufacturing activity to come soon after the opening of 1924. In practically all lines, however, conditions indicate business in large volume on close margins.

Tire production is in good volume in the larger plants. Many of those with capacity of several hundred a day are operating to their full limit. An early advance in tire prices is foreseen owing to the firm rise in cotton based on the insufficiency of the 1923 crop.

The heel business, while large in volume, is laboring under highly competitive manufacturing conditions. Large manufacturers of leather shoes may equip ultimately, as one already has, to manufacture their own rubber heels.

In mechanicals the trade is now seasonal, of moderate volume and close margin of profit in all lines except specialties. Manufacture of garden hose for the 1924 season is in progress.

Footwear manufacture is proceeding on the usual ticket for late winter and spring goods. The open winter in eastern United States has left retail dealers with more than average stocks, which will obviate need of replenishment unless the remaining winter months afford plenty of rubber footwear weather.

Durlop Activities

A branch managers' conference which took place December 9 was called by E. H. Kidder, general sales manager of the Dunlop Tire & Rubber Co., Buffalo, New York. At this meeting which was held in the new Buffalo Athletic Club building, and which was attended by those in charge of some of the leading Dunlop branches in various sections of the country, an outline of sales activities for the coming year was discussed, together with the advertising schedule for 1924. The conference was in anticipation of a general sales convention which is to be held at the Dunlop plant soon after the first of the coming year.

Mr. Kidder announced the following appointments: R. L. Marshall has been appointed manager of the Dallas, Texas, branch. Mr. Marshall will make his headquarters in Dallas, but will have charge of sales in Texas, Oklahoma, Arkansas, and part of Louisiana. Howard B. Armstrong has been placed in charge of the company's truck tire sales. Mr. Armstrong was formerly manager of O'Brien & Hoover, Inc., Philadelphia, Pennsylvania, and has had an experience of sixteen years in the truck tire business. L. W. Kennedy has been appointed manager of the branch offices at Atlanta, Georgia.

New York

E. O. McDonnell has been recently elected a vice president of the R. J. Caldwell Co., Inc., 15 Park Row, New York, N. Y., the executive personnel now including the following: R. J. Caldwell, president and treasurer; E. O. McDonnell, vice president; Theodore Wood, vice president and secretary, and M. C. Vander Pyl, assistant secretary. Mr. Wood has also been elected vice president of the Canadian organization, R. J. Caldwell, Limited, at Oshawa, Ontario. R. J. Caldwell is president and treasurer of both companies.

The Commercial Rubber Co., manufacturer and jobber, with headquarters at 640 Broadway, New York, N. Y., is engaged in the production of men's and women's all rubber belts for sports and bathing; all rubber "Baroness" garters for bathing and golf; bathing caps; etc. The company also handles other lines of rubber goods aside from its own manufactures.

E. J. Samuel, who for more than twelve years has held positions of responsibility with the Goodyear organization, is now connected with the Ajax Rubber Co., Inc., 218-222 West 57th street, New York, N. Y., as manager of its truck tire department. Mr. Samuel will make his headquarters in New York City.

Following charges of stealing stock valued at $175,000 from the offices of the Ajax Rubber Co., 220 West 57th street, New York, N. Y., William J. Jackson, a former secretary, has been recently indicted. Signatures of the transfer agent, as well as those of certain officers of the company, are said to have been forged.

After January 1, 1924, J. M. Huber, Inc., makers of carbon black for the rubber trade, will be located at 130 West 42nd street, New York, N. Y.

Ault & Wiborg, Cincinnati, Ohio, color makers, announce the appointment of F. C. Batchellor as their eastern representative in the rubber trade, with offices at 461 Eighth avenue, New York, N. Y.

Samuel Woolner, Jr., has been recently elected a member of the board of directors of the Kelly-Springfield Tire Co., 250 West 57th street, New York, N. Y., and also a member of the company's executive committee.

The New York City offices of the Lee Tire & Rubber Co. have been removed from 245 West 55th street to 33 West 60th street.

H. C. Bugbird Co., 55 Broadway, New York, N. Y., has been appointed selling agent of Woburn oil, the new rubber softener manufactured by The Woburn Degreasing Co., Harrison, N. J.

The organization known as Forney & Co., Inc., 100 Worth street, New York, N. Y., has been recently succeeded by H. M. Bunker & Co., with offices at 56 Worth street, New York, N. Y. The new concern will act as selling agent for the Fitchburg Duck Mills, Fitchburg, Massachusetts.

As the result of a comprehensive survey of the vulcanizing and tire repair business in New York City and vicinity, which indicated that the prospects of employment in this industry were not favorable, The Merchants Association's Automotive Trades Committee has recommended to the District Manager of the United States Veterans' Bureau that no more men be trained for that business, and that every effort be made to divert into other lines all those who are now in training but do not have a decided preference for that work.

Eastern and Southern Notes

The Helm Tire Service Corporation, 565 Broad street, Hartford, Connecticut, was recently capitalized at $50,000, and is now engaged in a tire service business. Charles W. Helm, who heads the organization, has been for a number of years interested in the sale of automobiles, tires and accessories.

Dowdy Bros., Lafayette Building, Philadelphia, Pennsylvania, are local sales agents for "Astrolith," a new lithopone.

A change of name is announced by The Hohwieler Machine & Engineering Co., Morrisville, Pennsylvania, an organization formerly carrying on operations as the Hohwieler Machine Mould & Die Works. The company specializes in the manufacture of molds, tools and equipment to meet every condition of service required by the rubber and composition industries.

O. W. Trumbull, formerly general manager of the Metric Packing Co., has recently become associated with the Belmont Packing & Rubber Co., 1133 Arch street, Philadelphia, Pennsylvania, as assistant to the president of the organization. The Belmont company was established in 1893, and is engaged in the manufacture of packings for all purposes.

At a special meeting of the board of directors of the Pennsylvania Rubber Company of America, Inc., Jeannette, Pennsylvania, the following were elected to the office of second vice president: D. D. F. Yard, New York, N. Y.; C. F. Kent, Kansas City, Missouri; and J. F. Madden, San Francisco, California. The appointments are in recognition of ten consecutive years of managerial service.

A petition in bankruptcy has been recently filed against the Traveler Rubber Co., Bethlehem, Pennsylvania. George R. Booth has been appointed receiver, and claims against the organization are being presented to him.

At a recent meeting of the directors of the Industrial Cost Association, A. A. Alles, Jr., of the Fawcus Machine Co., Pittsburgh, Pennsylvania, was elected president. He has always taken an active part in the work of the Industrial Cost Association, and was its first secretary. National headquarters are to be removed from New York City to Pittsburgh.

Encouraging prospects for the future are reported by The Rubbercraft Corporation, Doylestown, Pennsylvania, manufacturer of toys, decorated balls, play balls of various sizes, and a line of molded specialties. Executives of this organization include: William J. McLaughlin, president and general manager; Wynne James, vice president; and Willis Y. Harlow, secretary and treasurer.

On October 1 the Kelly-Springfield Tire Co. organized operations on an 8-hour basis at its Cumberland, Maryland, plant. Production at this factory has been on the increase for a considerable period.

J. T. Smyly has been recently appointed successor to John Hanna as office manager of The Milstead Manufacturing Co., Milstead, Georgia. This company, engaged in the manufacture of tire fabric, is one of the affiliated organizations which together constitute the Callaway Mills, with main offices at 345 Madison avenue, New York, N. Y.

The Vivian Spinning Co., Inc., Cherryville, North Carolina, has appointed G. J. Nord as general manager in charge of the manufacture of cotton yarns and tire fabrics, and the selling of such goods.

The Rubber Trade in New Jersey

Manufactured Goods

There has been a decided increase in the production of tires over mechanical goods in the New Jersey rubber plants, particularly at Trenton. As a rule the mechanical end of the business generally leads at this season of the year, but the open winter so far has greatly aided the output of tires and tubes. One tire manufacturing company recently placed a double shift of men at work and others report business as being fairly good.

A boom is looked for during the early part of January in the garden hose departments when the manufacturers will begin to turn out products for the coming summer. Millions of feet of the hose will be made and placed in the storehouses ready for shipment to the retailers. The majority of the rubber plants report a falling off of mechanical products, but look for the business to pick up after the first of the year. Hard rubber plants report business as being normal, while the demand for druggists' sundries has increased. Although tire manufacturers have plenty of orders on hand they contend that the profits are small and say they will welcome an increase in prices.

Rubber Manufacturers' Association

The annual meeting of the Rubber Manufacturers' Association of New Jersey was held on December 10 at the Stacy-Trent Hotel, Trenton, New Jersey, when officers were elected for the ensuing year. The following officers were reelected: President, Charles E. Stokes, the Home Rubber Co.; vice president, Frank Voorhees, Voorhees Rubber Manufacturing Co.; secretary, Clarence D. Wilson, the Luzerne Rubber Co.; treasurer, A. Boyd Cornell, Hamilton Rubber Manufacturing Co.

The speaker of the evening was A. L. Viles, general manager of the Rubber Association of America, who spoke at length on the present rubber situation and the inauguration of the balloon tires now being tried out by some of the concerns. It was the opinion of some of the tire manufacturers that the balloon product would not be a complete success and that it would mean a tremendous cost in the changing of equipment. Mr. Viles also answered a number of questions on rubber asked by the members present.

The association membership is now being made up of representatives of eighteen rubber manufacturing concerns, including one Philadelphia company.

Trenton Tire Dealers' Association Planned

Tire manufacturers and dealers of Trenton, New Jersey, held a meeting at the Stacy-Trent Hotel, Trenton, on December 19, for the purpose of forming a tire dealers' association. Frederick Petry, Jr., president of the Petry Motor Sales Corporation, was elected temporary president, while Daniel H. Volk, of the Volk Tire Co., was made temporary secretary.

Jerome T. Shaw, editor of *Tires*, gave a talk on the social benefits and the business helps of such an organization. William W. McMahon, general manager of the Ajax Rubber Co., urged cooperation between the manufacturer and the dealer. George J. Berger, president of the National Tire Association, recounted the origin of that organization. C. A. Hutchings, assistant secretary of the Trenton Chamber of Commerce, talked on the "Value of Organization." Mr. Howell, director of the National Association, also spoke. Bernard E. Sweeney, of the C. & S. Tire Shop, Trenton, presided over the meeting. A permanent organization will be perfected shortly.

Trenton

Friends of William J. B. Stokes, treasurer of the Thermoid Rubber Co., have recommended that he be presented with the Trenton Times Civic Cup for performing within the past year the most outstanding useful and unselfish work. Mr. Stokes recently completed at his own expense a handsome day nursery for the children of Trenton, New Jersey. Mr. Stokes has been endorsed by many prominent citizens.

Thomas H. Thropp, president of the Trent Rubber Co., and General C. Edward Murray, president of the Crescent Insulated Wire & Cable Co., are to be delegates from this district to the Republican National Convention in Cleveland, Ohio.

The Better Tires Co., Chicago, Ill., is negotiating for the purchase of the plant, equipment and goodwill of the Globe Rubber Tire Manufacturing Co., Trenton. The western concern recently made an offer of $168,200 for the Trenton plant. A special meeting of the stockholders of the Globe company was held on December 17 to consider the sale of the plant, including a parcel of land adjoining the factory, but the offer was turned down.

The United & Globe Rubber Co., adjoining the Globe tire

plant, went into the hands of a receiver some time ago, but is said to be in good financial condition.

Vice Chancellor Backes has allowed fees of $15,000 and $10,000 respectively, to John P. Kirkpatrick and August C. Streitwolf, of New Brunswick, New Jersey, covering services for three years as receiver and receiver's counsel in straightening out the affairs of the Stanwood Rubber Co., Elizabeth, New Jersey. The Stanwood company, which also owned the Hardman Rubber Co., New Brunswick, likewise insolvent, went into the hands of a receiver on November 3, 1920.

The Empire Tire & Rubber Corporation is operating twenty-four hours a day and has plenty of orders to fill. All mechanical departments are busy.

The John E. Thropp Sons Co., manufacturers of tire and rubber making machinery, reports increased business in that line.

The Hamilton Rubber Manufacturing Co. experienced a rather dull Fall, but orders are now increasing. A big output in fire and garden hose is expected for the spring months.

The Crescent Insulated Wire & Cable Co. and Armored Wire Co., Trenton, New Jersey, were recently incorporated at Springfield, Illinois, with $2,500,000 capital, to do business in the state of Illinois. General C. Edward Murray, former president of the Empire Rubber Corporation, heads both the above concerns, which have opened an office at 559 West Monroe street, Chicago. J. P. Stackhouse is in charge of the western office.

George C. Gildea, receiver for the Nottingham Rubber Company, has wound up the affairs of the concern and has settled with the stockholders. The company was incorporated at Trenton by C. Francis Fisk, of Trenton, and Samuel H. Bell, of Reading, Pa., with a capital stock of $500,000 to manufacture a patented puncture-proof inner tube.

John S. Broughton, for many years president of the Globe Rubber Tire Manufacturing Co., Trenton, New Jersey, has recently retired from active service, and J. C. Bolt, secretary and treasurer of the organization, is temporarily filling the vacant position. Considerable enlargements of the company's manufacturing facilities have been lately made, due to increasing calls for certain brands of inner tubes.

New Jersey Notes

Vice Chancellor Church has issued an order for the Meeley Tire & Rubber Co., Garfield, N. J., to show cause why a permanent statutory receivership should not be established for its liquidation. James E. Wilson was named custodial receiver by the vice chancellor. The Meeley company was incorporated May 29 last with an authorized capitalization of $600,000.

The Michelin Tire Co., Milltown, New Jersey, recently gave a demonstration of their new balloon-type "Comfort" cord tires. The demonstration lasted a week and during that time cars equipped with the balloon tires were used to give the public a ride in both Newark and New York. The new tire provides for twice as much air space with half as much air pressure. They fit the same rims and are sold for about the same price as ordinary tires.

The Sterling Tire Corporation, Rutherford, New Jersey, has recently absorbed the Aladdin Tire Corporation, of East Rutherford, but will continue to manufacture "Aladdin" tires, as formerly produced by the latter organization.

The affairs of the Smith Rubber & Tire Co., Garfield, New Jersey, have finally been disposed of by George R. Beach, referee in bankruptcy, who announces that former employes will be paid their claims. The company went into the hands of a receiver about eighteen months ago. At that time it was announced that the assets were $161,027 and the liabilities $254,605. Several thousand stockholders were affected by the collapse of the concern.

An offer of $28,000 has been made for the property of the Dural Rubber Company, Flemington, New Jersey, which has been in the hands of a receiver for some time. The offer has been made by William C. Ehrenfeld, who was for several years superintendent of the plant, and during the receivership has been manager. The offer will be considered soon by the Court of Chancery. The company specializes in the manufacture of rubber for airplanes. Frederic F. C. Pearse, secretary to Governor Silzer, is receiver of the company. The concern has been busy since going into the hands of a receiver.

HARD RUBBER DUST PLANT

The requirements for hard rubber dust used in making hard rubber goods is so great that the Somerset Rubber Reclaiming Co., New Brunswick, New Jersey, is installing equipment which will eventually produce 15 tons of dust daily. The immediately available capacity of the machinery already in operation is 15,000 pounds daily. The product is made under careful technical supervision and standardization.

The Rubber Trade in Massachusetts

Manufactured Goods

The seasonal holiday quiet affected most branches of rubber manufacture adversely, although business during the first half of December was such that, with the good month of November, the last quarter of the year 1923 will prove better than many firms had expected. Long continued mild weather, with meager rains and snow only in limited areas of the country, has prolonged the driving and building season. In consequence tires and insulated wires have prospered at the expense of rubber footwear and clothing. The unprecedented production and sale of cars has also been a boon to the proofing trade, and manufacturers of artificial leather and deck cloth are sold well in advance.

Footwear factories will go on a short schedule following the holiday shut-down, and as advance orders are practically all filled and retail sales light, this promises to continue until work is begun on tennis lines. Heel output continues to increase at competitive prices, but this is the off season for rubber soles.

The mechanical trade is enjoying satisfactory volume, but prices have become highly competitive. Druggists' sundries are seasonally active, and hard rubber goods of most kinds, and particularly for radio parts, are in good demand.

Massachusetts

The Firestone-Apsley Rubber Co., Hudson, prior to its annual two weeks' shut-down for inventory and repairs, presented each of its twelve hundred employes with a new one dollar bill of the George Washington series. In addition, numerous awards ranging from $50 down to $2.50 were made for the best offerings in the Christmas suggestion box. The first award of $50 went to Fred K. Foster, who also received an additional $50 for a suggestion covering an improvement in cutting room production control.

O. W. Tyler, a traveling salesman for the Seiberling Rubber Co., Akron, Ohio, mourns the loss of his wife and four-year-old daughter, who were killed in a railway crossing accident near Greenfield, Massachusetts, on December 24, when he also was injured. Mr. Tyler and his family were motoring to a Christmas family reunion at Brattleboro, Vermont. He saw the train when nearing the grade crossing, but the car skidded and could not be stopped in time.

Boston

Lockwood, Green & Co., engineers and managers, of Boston, have been engaged by the Ford Motor Co. of Detroit, Michigan, to establish a spinning, weaving and dyeing plant in Detroit. In the new plant will be made the cloth which is used as a backing for the artificial leather in Ford cars. It is stated that a highly abbreviated and automatic process will be employed in the production of this fabric.

The Boston Woven Hose & Rubber Co., Boston, reports a very satisfactory business in its various mechanical lines. The direc-

tors of the company have declared a quarterly dividend of $1.50 per share on the common stock, thereby placing the issue on a $6 annual basis as compared with the $4 formerly. This brings the dividend rate back to the same basis as before the par value of the stock was reduced from $100 to no par value and two shares were distributed for every one of the old.

The Edgeworth and Fells factories of the Boston Rubber Shoe Co., at Malden and Melrose, and the American Rubber Co. plant at Cambridge, all subsidiaries of the United States Rubber Co., were shut down for ten days beginning December 22, after which these plants went on a four-day week schedule. A backward season with unfavorable weather for rubber footwear and clothing is assigned as the cause.

Officers and employes of the United Shoe Machinery Corporation have been given an opportunity to purchase common stock of the company up to twenty shares at $28 a share, paying for it in twenty-eight weekly instalments. Some eight thousand employes of the parent company and subsidiaries are eligible under the plan. The stock offered has been acquired by the company in the open market. The number of shares to be allotted is limited and the allotment will be made after December 31.

The J. Frank Dunbar Co., Inc., crude rubber brokers, New York, N. Y., formerly represented in Boston by Leroy C. Holbrook, with an office at 166 Essex street, is now represented by Frederic V. Larkin, who is located in the Old South Building. Mr. Holbrook is assistant treasurer of Ceylon Rubber Products, Inc.

Ceylon Rubber Products, Inc., sole American agents for Mayow patent plantation molded soles, are now located in the heart of the shoe and leather district at 113 Lincoln street, room 706.

DAYTON SALES CONFERENCE

Improved conditions in the tire industry was the general opinion of the branch sales managers of the Dayton Rubber Manufacturing Co., who recently held an important conference with the factory executives at Dayton, Ohio.

"As a result of the growth of our business in 1923, the information gained at first hand from reports of our branch managers, we are conservatively optimistic about the future," states J. A. MacMillan, president and general manager. "We are making plans for an increase in business in 1924 and have set our quota at a figure 25 per cent above that of the present year. Leading industries of the country are making new sales records, which is an indication of the general prosperity. Merchants are buying supplies and merchandise and farmers are purchasing more goods than at any time in the last two years."

The Dayton company has been steadily growing and is now one of the strongest of the smaller manufacturers, having national distribution.

Conference of Branch Managers and Factory Executives of The Dayton Rubber Manufacturing Co., Dayton, Ohio.

The Rubber Trade in Ohio

Manufactured Goods

Increasing tire and mechanical goods production, peak production in boot and shoe departments, and excellent business in other rubber factory departments summarizes manufacturing conditions in the rubber center and state.

While accurate ticket figures are not available it is reliably reported that tire production is now in the neighborhood of 70,000 to 72,000 tires a day in the Akron district and that a continual increase in working forces is enlarging this production ticket almost daily.

The remarkable and unexpected consumption of tires for new cars in the manufacturing center is taking a much larger number of casings and tubes than ever before in the winter history of the industry while the spring dating business is everything which could be desired. The manufacturers' tire business is being booked on a new rate from 5 to 10 per cent advance over the previous low rate and this is making this business much more desirable. The fact that the old prices obtain in the replacement business while fabric continues an upward movement leaves the margin of profit exceedingly small on this type of product.

Constantly increasing business in all other lines is having its effects on mechanical goods departments although existing prices do not as yet net the industry the profits which should be in this business. The boot and shoe business this winter thus far is at least 10,000 pairs ahead of any previous winter and the daily output is now estimated at 35,000 pairs for the city.

A further reduction in wage scales in one of the factories resulted in minor labor troubles during the month but similar action in at least one of the other factories was accepted by the men without any organized objection. The reduction in both wages and some decrease in high salaried executives is one of the steps still necessary according to authorities to bring production costs to necessary low levels.

1923—A Prosperous Year for Akron

From a production standpoint the Akron rubber industry is closing one of its biggest years and at the same time is making preparations for probably the greatest year in its history during the next 12 months. Production of rubber goods during the past year is in excess of $334,000,000 as compared with $266,000,000 during 1922 and $328,000,000 in 1921. While this figure is only slightly more than half of the output of 1920, when the total reached was $544,000,000, the difference in prices between the two years warrants the conjecture that unit output in 1923 was greater than during the peak period.

Chamber of Commerce figures for the year give the total payroll of the rubber industry in the rubber center at $64,000,000 which is approximately the same figure as in 1922. While rubber factory

employment figures are not segregated the fact that during both 1922 and 1923 total employment was in the neighborhood of 50,000 leads to the opinion that employment was approximately the same in the rubber factories during the two years.

The coming year appears to give greater promise than the year which has closed. For the tire industry alone it is predicted that more than 47,000,000 casings will be required. This estimate is on the basis of two and one-half tires per car for cars in operation and on the basis of 3,000,000 automobiles to be made during the year. This latter figure appears to be extremely conservative to some of the larger tire makers.

Firestone Predicts More Stable Conditions

At the recent annual meeting of the stockholders of the Firestone Tire & Rubber Co., Akron, Ohio, Harvey S. Firestone, president of the organization, predicted for the coming year a steady upward trend in business and more stable prosperity for the rubber industry.

The Firestone Canadian subsidiary completed last year is now in full operation; the Firestone Steel Products Co. has just completed the largest year in its history; and the Firestone-Apsley Co., Hudson, Massachusetts, the shoe manufacturing subsidiary, has enjoyed the largest business of its history.

Mr. Firestone declared that his campaign in behalf of rubber supply investigation had already produced excellent results, and that the work as instituted would be continued in the coming year. Improved conditions for the farmer and the great development of the country's highway systems were also mentioned by Mr. Firestone as reasons for encouragement.

Goodyear Rubber Paving

Goodyear Tire & Rubber Co. will pave a strip of heavy traffic street 20 feet long with rubber paving block which is said to be the first experiment of its kind on a large scale in America. The company has obtained from the city a permit to do the paving and although no announcements have as yet been made the first of the year will probably find the pavement in.

The rubber blocks made by Goodyear are 8 inches long by 4 inches wide by 3 inches deep. Hard surface and soft surface blocks will be used in the experiment.

Akron

In order to secure economical production and provide for the needs of an increasing business, The American Rubber & Tire Co., Akron, Ohio, has recently completed a refinancing program, which was accomplished by the sale of debenture notes. These notes were taken up almost entirely by stockholders, executives and employes of the company, while during last summer a complete reorganization of the concern's affairs also took place. As a result the outlook for the coming year is more promising.

During the past month it has been indicated that if government sanction is given to official requests for improved and enlarged aviation programs the Goodyear Tire & Rubber Co. will employ between 3,000 and 5,000 men and women in its aviation department by the end of the year.

Mason Tire & Rubber Co., Kent, announces that its fabric mill which has been closed down since the first of 1923 has been placed in operation and that output will be gradually increased during the next two months. Figures regarding output of its tire factories at Kent and Bedford have not been given out for some time although it is known that production is materially below normal.

In forming tentative plans for commemoration of men who have aided in making Akron famous, members of the city government have suggested plans of erecting a memorial to Charles Goodyear. At the present time there is no memorial of any kind in the rubber center to any of the inventors connected with the rubber industry.

P. W. Litchfield, Goodyear factory manager, expressed the opinion in a recent public speech that in time Germany, with her problems solved or in hand, will become a strong competitor of American manufacturers and Americans must be on their guard lest the factories do not come into the same circumstances in which American agriculture now finds itself.

National Standard Co. will occupy the former B. & W. Rubber Co. plant in North Akron after the first of the year, according to official announcement. The company is moving to Akron from Niles, Michigan.

Hugh Allen, head of the publicity department of the Goodyear Tire & Rubber Co., has been elected a director of the Akron Chamber of Commerce. Allen is the only rubber man who was named on the directorate at the last annual meeting.

The Williams Foundry & Machine Co. has been incorporated by H. Lloyd Williams, C. Franz, H. E. Andress, D. W. Maxon, and C. G. Wise for a nominal sum of $500. The purpose of the new organization, which has the same name as that of a company already existing, has not been definitely announced.

The Anaconda Copper Co., which located in Akron a year and a half ago to produce zinc oxide for the rubber industry, is completing an addition to its plant which will double production capacity.

The New Haven Sherardizing Co., which moved to Akron a year ago, is operating its plant to capacity and may add to factory space, according to unofficial statements.

H. C. Hanson, for several years connected with The B. F. Goodrich truck tire department and more recently working in the same field for the Republic Rubber Co., of Youngstown, has been named a director of the Republic company, according to announcements made here.

H. S. Firestone, president of the Firestone Tire & Rubber Co., acted as county chairman here in connection with the raising of funds for the proposed Harding memorial.

Ohio Notes

Trump Brothers Rubber Co., occupying the former Denmead Rubber Co. plant in East Akron, is building an addition to its plant to provide larger capacity for its belt and other rubber novelties. The cost of the new addition has not been announced.

Callaway Mills, Inc., 345 Madison avenue, New York, N. Y., have opened a branch office in the Second National Bank Building, Akron, Ohio, with Lawrence A. Watts in charge. This office will give better service to the midwestern trade, and is probably the first selling agency of a cotton mill to have direct representation in Akron.

Although official announcement has been lacking it is reported that the Seiberling Rubber Co. will place almost its entire production capacity on the "All Tread" tire which this company developed during the past year. The change is now being made in the Portage plant at Barberton. The New Castle plant of the company continues to be idle, according to reports.

The Rubber Products Co., Barberton, will probably continue operation without a president, it is officially reported, following the resignation of C. C. Schultz, former head of the company. J. J. Johnston, son of the founder of the company, is chairman of the board.

An increased production of Victor-Springfield cord tires is reported by The Victor Rubber Co., Springfield, Ohio. This organization, now one of the largest producers of automobile floor mats, has recently installed equipment for the manufacture of other rubber automobile accessories. H. S. Berlin is president.

Walter E. Hane, previously associated with the Firestone Tire & Rubber Co., has been recently appointed treasurer of The Mt. Vernon Rubber Co., Mt. Vernon, Ohio.

Following the recent resignation of W. G. Downie as general sales manager of The Dayton Rubber Manufacturing Co., Dayton, Ohio, the organization announces the appointment of G. W. Spahr

as his successor. Mr. Spahr has had a wide experience in the field of merchandising. The Dayton organization looks for a reasonable increase in business during the coming year and faces the future with optimism.

Operations at the plant of the Republic Rubber Co., Youngstown, Ohio, are now between 70 and 75 per cent of capacity, while during the last two months much additional machinery has been installed. The factory is now employing about 1,200 persons, while the number, soon after the beginning of the year, is to be increased to 1,800 or 2,000. E. H. Fitch is president.

The Century Rubber Co., Wadsworth, Ohio, which specializes in the production of advertising and toy balloons, has been recently reorganized, while additional factory equipment has also been installed. During the coming year the company plans erecting another building, three times as large as the present plant, which will permit the construction of additional stories as needed. The factory output has increased 500 per cent over that of last year, and a twenty-four hour schedule is being maintained in order to meet the demands for the company's products.

G. C. Mechlin has been recently appointed factory superintendent of The McKone Tire & Rubber Co., Millersburg, Ohio, following the resignation of K. D. Smith, formerly factory superintendent and director. W. A. Miller will succeed Mr. Smith as a member of the board of directors.

The McQuate Rubber Co., Marion, Ohio, has recently doubled its plant production of toy balloons, while plans for the future include the manufacture of other items, such as balls, nipples, gloves, and molded toys of every description. When enlargements of the plant become necessary such lines will be added, but for the present the company is devoting its energies to toy balloon production. W. W. McQuate is general manager.

T. W. Decker, Jr., is now in charge of the Cleveland, Ohio, offices of the Dunlop Tire & Rubber Co., Buffalo, New York.

The Rubber Trade in the Midwest

Midwest Rubber Manufacturers' Association

Many questions of importance to the industry were discussed at the regular monthly meeting of the Midwest Rubber Manufacturers' Association, which was held December 11 at the rooms of the Old Colony Club, Hotel LaSalle, Chicago, Illinois. Among the matters under consideration were: the probability of increases in tire prices; the use of balloon tires; the need for a better system of granting credits; the demand for uniformity in regard to dating, rebates, terms, etc. Interest was also shown in the discussion as to the possibility of the removal by the government of the 5 per cent excise tax on automobile tires.

The next meeting will take the form of an annual banquet, and will be held January 29, 1924. A committee has been appointed to make the necessary arrangements.

Midwestern Notes

Wishnick-Tumpeer Chemical Co., 365 E. Illinois street, Chicago, Illinois, is sales agent in Chicago, Cleveland and New York, N. Y., for "Astrolith," a new lithopone.

The Rubber Ace Corporation, Elgin, Illinois, is specializing in the manufacture of a substitute for the ordinary type of inner tube. The invention utilizes a high grade of sponge rubber specially treated to prolong the lasting qualities of the rubber. By a system of wedges great flexibility in installation is also secured. The sponge rubber acts as a shock absorber, and, it is claimed, lessens the wear on gear, springs and engine, while through its use loss of traction is said to be prevented, as well as side-sway and a tendency to skid. J. H. Dalbey is secretary of the organization.

The Mineral Rubber Products Co., Moline, Illinois, has recently erected three new buildings, and has also been installing equipment for the manufacture of a complete line of mechanical rubber goods. Executives of the organization include: L. E. McKimm, president and general manager; A. G. Abraham, vice president; R. S. Anderson, treasurer; P. H. O'Brien, secretary; and Walter Altenberg, plant superintendent.

L. J. D. Healy, formerly connected with the Wright Rubber Products Co., has been recently made chief chemist of the Federal Rubber Co., Cudahy, Wisconsin.

An erroneous report has been circulated regarding the supposed resignation of J. D. Wiggins as president and general manager of the two plants maintained at Indianapolis and Anderson, Indiana, by the International Rubber Company of America. Mr. Wiggins emphatically denies that any such change in management has been made or is being contemplated.

The new plant of the St. Louis Lithopone Co., Railway Exchange Building, St. Louis, Missouri, is now producing "Astrolith," a new lithopone. T. P. Thomy is president of the concern.

The Rubber Trade on the Pacific Coast

Manufactured Goods

Rubber manufacturers on the Pacific Coast speak very confidently about trade prospects for 1924. The year just closed has been with all well-managed concerns a very profitable one, and several of the larger plants are planning in consequence a considerable extension of their output during the coming twelve months. The large eastern and mid-western rubber companies which maintain branches here have fared well, the largest of these having scored a net increase in Pacific Coast business for 1923 of over 30 per cent., with even better prospects for 1924.

Some tire makers were troubled over the announcement recently of a reduction in the rail rate from the Middle Atlantic and New England States on straight carloads of pneumatic tires and tubes and on mixed carloads of pneumatic and solid tires, tubes, rims, parts, flaps and reliners. The Coast men had already been given a handicap in rail reductions made from Buffalo, Pittsburgh, and points west, and had adjusted prices accordingly. The new rate is $3 per 100 pounds, as compared with a former average of $3.32, the drop being about 9.6 per cent. Still, the Coast men feel that economies in production will largely offset the advantage eastern tire and rubber makers have gained in rail rates.

Extending the credit of tire dealers three and in some cases four months as an inducement for them to place winter orders has resulted in keeping some of the tire factories very busy and giving needed employment to many during what might otherwise be a slow season; but this policy of the manufacturers does not meet with unanimous approval. Recently the San Diego Automobile Trade Association, which includes most of the tire dealers of the city and environs, resolved to put in no more large and, to them, unnecessary stocks on long-date invoices as it tied up too much capital without corresponding advantage.

The advent of balloon tires does not give Pacific Coast tire makers much concern. They are watching the experiments being made with the new low-pressure casings, but they are inclined to believe that they will not for a long time seriously compete with the old line standard tires on the Coast, where the roads are unusually good and where weather conditions, for the most part, do not require the use of "doughnuts" as in other parts of the country.

Pacific Coast rubber manufacturers, and not a few of the western branches of big eastern and midwestern rubber concerns, depend upon the oil industry in California for considerable business, and the recent slowdown in oil production, due to low prices chiefly, for crude and refined products, has slackened sales of heavy hose, belting, pump valves, packings, and sundry other goods. It is generally agreed, however, that the worst is passed and recovery is likely to come soon, perhaps very suddenly.

Los Angeles

Spring dating orders in unusually large volume have been keeping the big plant of the Goodyear Tire & Rubber Co. of California in Los Angeles working close to capacity during the past month. The dating began November 1, 1923, and will end on February 1 and March 1, 1924, depending upon the distance of buyers in the eleven western states served from the factory. The chief officers of the parent Goodyear company in Akron will inspect the Los Angeles plant this month prior to the annual meeting of the stockholders. It is intimated that the financial report will show the company's affairs to be in a very much improved condition. This betterment has been indicated in a sharper demand for the company's stock, especially the preferred shares.

The West American Rubber Co., 400 N. Avenue 19, Los Angeles, of which Douglas Radford is president, reports a good demand for paper makers' rolls and general mechanical goods; and that it is doing a considerable and increasing business in patented specialties for the making of which it has exceptional facilities.

The Los Angeles branch of the United States Rubber Co. will be moved on January 15 to new headquarters, the commodious building just erected by the company at E. Eighth and San Pedro streets. Business is unusually good in all lines, according to Branch Manager J. B. Magee, who now has to look after forty outside salesmen, and who has again been given the care also of the company's Arizona branch, which for two years had been under other management.

The Hendrie Rubber Tire Co., of Torrance, a suburb of Los Angeles, has been averaging well over 300 casings daily of late and reports a steadily growing demand for red and gray tubes, a new line for this old concern.

J. B. Reilly, president of the Reilly Rubber Co., 2432 E. 56th street, Los Angeles, has returned from a trip to the Hawaiian Islands, where he arranged for the sale of tubes to many of the 11,000 automobile owners there.

William J. Blackmore, for the past ten years connected with the Manhasset Manufacturing Co., producing tire fabric at Providence, Rhode Island, and Putnam, Connecticut, has been recently appointed paymaster in charge of the accounting department of Imperial Cotton Mills Co., 1828-58 North Main street, Los Angeles, California.

At a location yet to be announced, the Fisk Flap Tire & Rubber Co., of Camden, New Jersey, intends to maintain a branch in Los Angeles to take care of its Pacific Coast business. The Fisk concern recently bought the patent rights for the flap tire from the Premier Tire & Tube Co., Ltd., of Toronto, Canada. D. Parker Gravatt, care of N. E. Henderson Co., Philadelphia, is president.

The Brunswick-Balke-Collender Co., manufacturers of billiard tables, phonographs, and other products, is planning to establish a factory in Los Angeles for pressing phonograph records. The site has not yet been announced.

San Francisco

The annual convention of western branch managers of the United States Rubber Co. was held in San Francisco for three days beginning December 7, under the direction of Western Division Manager J. B. Brady. Heads of fifteen branches attended and made very encouraging reports. Besides an inspiring address by Mr. Brady, special talks were given on tires, footwear, and mechanicals, and plans were outlined for the 1924 sales campaign. A banquet at the Bohemian Club and a theater party given by Mr. Brady concluded the convention.

The Universal Tire & Rubber Co., 938 to 958 Harrison street, San Francisco, has changed its name to the Universal Rubber Manufacturing Co. as being more descriptive of the general line of goods made by the concern, such as rubber conveyor, elevator, and transmission belts, hose, and various mechanicals. Only a few special tires are still made. A new line in which the company is achieving large success is that of making rubber rolls for printing presses; and it is also doing a good business in rubberizing pumps, heavy bearings and acid containers, compounds being made from exclusive formulæ. George M. Stevens is president and John V. Filipinni secretary.

Barthold De Mattia, of De Mattia Brothers, tire building equipment and mold manufacturers, of Garfield, New Jersey, has been renewing acquaintances in the rubber trade in western and Pacific Coast cities. He expressed much surprise at the growth of the rubber industry, particularly on the Coast.

With the approaching completion of one new building and with two others erected during the last two years, The American Rubber Manufacturing Co., Oakland, California, now includes in its plant area about 67,000 square feet of floor space. Still other constructions are being planned for the coming year by this organization, which specializes in the production of mechanical rubber goods. N. S. Dodge is president and J. L. Dodge treasurer.

The Keaton Tire & Rubber Co., 636 Van Ness avenue, San Francisco, California, has recently taken over the distribution of the products of the Hayes Wheel Co., limiting its territory, however, to Central and Southern California. A pamphlet containing a brief outline of the new California law governing the operation of motor vehicles is also being offered to the motoring public by the Keaton organization.

A new concern which is doing considerable business is the Resilient Safewheel Co., 18th and Cypress streets, Oakland. It makes a spring, disk-covered wheel with a clincher rim to hold 30 by 3½ pneumatic tires; and the claim is made that the wheel saves 50 per cent in car depreciation and 25 per cent in casing wear. A head sales office will be maintained in Los Angeles with D. D. Bohannon in charge.

The Barber Asphalt Co., Land Title Building, Philadelphia, Pennsylvania, manufacturer of Genasco mineral rubber, asphaltic roofing and flooring, paints, etc., has recently opened a branch office at 807 Phelan Building, San Francisco, California, in charge of C. M. Foster, district manager. Mr. Foster formerly represented his company at Washington, D. C., in its sale of Barber products.

Pacific Coast Notes

The Portland Tire Dealers' Association reports that many abuses connected with the marketing of "gyp" tires have during 1923 been wholly abated through the active cooperation of legitimate dealers; and plans are being made for a still more aggressive campaign in 1924 to put and keep the tire trade on a sound basis. Seth Leavens, of Leavens & Howard, is the new president, succeeding Mark Swift, who resigned. The association was represented by Ray Conway, of Coffey & Conway, at the recent annual convention in New York of the National Tire Dealers' Association.

The Huntington Rubber Mills, Macadam and Nevada streets, Portland, Oregon, Harry Huntington, president and general manager, has been working lately to the limit of its capacity, meeting a demand for specially-made non-skid rubber heels throughout the Coast states. The mills have also been kept unusually busy supplying tire repair stocks and in executing special orders.

Soon after the first of the year a new organization known as The Stuart Puncture-Proof Liner & Tire Co. will begin the manufacture at 343 Vancouver avenue, Portland, Oregon, of its cotton-top puncture-proof tires.

The Diamond Rubber Co., Inc., 1780 Broadway, New York, N. Y., has been recently granted a permit to operate in the state of Oregon.

ACCORDING TO STATISTICS COMPILED BY THE EXPORTERS' DIRECTORY of the Netherlands East Indies there are in that country 56 firms engaged in exporting plantation rubber, while about half of these companies are also shipping gutta jelutong, gutta percha and other kinds of gutta.

The Obituary Record

A Director of the Faultless Rubber Co.

MEMBERS of the business organization known as the F. E. Myers & Brother Co., of Ashland, Ohio, as well as many personal friends and acquaintances, learned with regret of the death on December 2, at the age of 74 years, of Francis E. Myers, head of a company which is known as the largest pump manufacturing industry in the United States.

Francis E. Myers

The Myers family was of German origin, and were early settlers of Ohio. The subject of the present sketch, the eldest son of George and Elizabeth Myers, was born on a farm near Ashland, Ohio, where he spent his earliest years. Beginning his business career at the age of 22 with the securing of a small position in Ashland, Mr. Myers started for himself with the establishment four years later, also in Ashland, of a little agricultural implement shop Still later becoming connected with the Butcher & Gibbs Plow Co., of which organization he finally became president. Mr. Myers was also interested in an invention patented by his brother, P. A. Myers. Meeting with success in the manufacture in a small way of their double-acting force pump, the two brothers established in 1885 their own factory for its production, this being the nucleus of the present great industrial organization.

Mr. Myers became greatly interested in improving local conditions, and was a generous contributor to Ashland College and also to Wittenberg College of Springfield, Ohio, acting as one of the trustees of the latter organization. As a business man, he became director of many important enterprises, among them being the Faultless Rubber Co., of Ashland. He was a member of the Lutheran church, and was also prominent in the Masonic fraternity. Mr. Myers is survived by three children, one of them being Helen A. Miller, wife of Thomas W. Miller, president of the Faultless Rubber Co.

A Prominent German Rubber Chemist

After a long illness, the internationally known scientist, Professor Carl Dietrich Harries, died recently.

Dr. Harries was born August 5, 1866, in Luckenwalde, Brandenburg, Prussia. He was educated at the Gymnasium of Jena and later at the Universities of Jena, Munich, and Berlin. In 1890 he became the assistant of A. W. von Hofmann and in 1892 was assistant instructor in the organic laboratory of the Berliner Laboratorium, under Emil Fischer.

In 1900 Dr. Harries was departmental head of the newly built chemical institute of the Berlin University. Four years later he was called upon to direct the Chemische Institut at Kiel, where he did valuable work until 1916 when he returned to Berlin. After another two years we find him honorary professor at the Technische Hochschule, Charlottenburg. It should be added that in 1903-04 he was general secretary at the St. Louis Exhibition. During the last years of his life he was delegate of the supervising committee of the Siemens concern for scientific-technical plans.

Dr. Harries was a hard worker and made most important contributions to the chemistry of rubber. His discoveries in connection with the rubber molecule formed the foundation for the work of making synthetic rubber which was carried out under his direction. Harries' discovery of the ozonids of the unsaturated carbo-hydrogens led to the recognition of carbo-hydrogen.

His loss will be keenly felt in the scientific rubber world.

RUBBER ASSOCIATION BALLOON TIRE STANDARDS

The Executive Committee of the Tire Manufacturers' Division recommends the following tentative standards for adoption.

Cross-Sectional Diameter, Inches	Rim Diameter, Inches	Rim Width, Inches
4.40	21	3½
5.25	21	4
6.20	21	4½
6.20	20	4½
7.30	20	5

It is urgently recommended that the tire be marked "Balloon Type" and that the dimensions inscribed thereon shall be actual; in other words, the diameter of the cross-section and the rim and the rim width, for example:

4.40—21 inch for 3½ inch rim		4.40 for 21 by 3½ inch rim
5.25—21 inch for 4 inch rim		5.25 for 21 by 4 inch rim
6.20—21 inch for 4½ inch rim	or	6.20 for 21 by 4½ inch rim
6.20—20 inch for 4½ inch rim		6.20 for 20 by 4½ inch rim
7.30—20 inch for 5 inch rim		7.30 for 20 by 5 inch rim

ACTIVITIES OF AMES HOLDEN ORGANIZATION

A complete severance of relations with the leather shoe industry is announced by the Ames Holden Tire & Rubber Co., Limited, Kitchener, Ontario, in the withdrawal of W. B. Wiegand from the leather shoe house of Ames Holden McCready, Limited. Mr. Wiegand will hereafter as vice president and general manager of the first-named organization devote his entire attention to the production and sale of rubber products, mainly automobile tires and tubes and rubber footwear.

Head offices of the Ames Holden Tire & Rubber Co. have also been removed from Montreal to the factory at Kitchener, Ontario, where rubber footwear, formerly produced as "Ames Holden" merchandise will be marketed under the name of "Rhino" to the retail trade of Canada. "Ames Holden" tires and tubes will, however, continue to be sold, as well as Goodrich tires, Silvertown Cords, etc., the latter made for the B. F. Goodrich Co. of Canada, Limited, Toronto, Ontario. Sales and distributing warehouses are located in Montreal and Winnipeg.

RUSSIAN RUBBER PRODUCTION PLANS

A program of production for the year 1923-24, which in total value represents an increase of 15 per cent over that of the year preceding, has been recently drawn up by the Russian Rubber Trust, the total amount being estimated at over 51,000,000 gold roubles (calculated in pre-war prices). The main items of production are as follows: galoshes, 8,000,000 pairs, with an approximate value of 20,000,000 gold roubles; 60,000 pneumatic motor tires, valued at 6,000,000 roubles; 120,000 motor tubes, valued at 2,610,000 roubles; 15,000 motor lorry tires, valued at 2,580,000 roubles; 60,000 carriage tires, at 1,620,000 roubles; and 13,860,000 yards of belting, valued at 3,600,000 roubles.

Compared with the actual production for the year 1922-23 this program shows a reduction of 20 per cent in the output of galoshes but an increase of 40 per cent in pneumatic tires, of 200 per cent in tubing, and of 60 per cent in various specialties. It is estimated that 5,000 tons of raw rubber will be required for the proposed output, and that the number of workers must be increased from 11,750 to 13,900. The profits of the Trust during 1923-24 will, it is said, be about 9,000,000 gold roubles.—*India Rubber Journal*, London, England.

The Rubber Trade in Great Britain

By Our Regular Correspondent

Mainly Political

WRITING in the throes of a general election it is difficult to avoid reference to the all-absorbing fight between the advocates of protection and free trade. In the speeches of the protagonists references to any other rubber goods except tires have not been noticed, and what is more, the case as put for the imposition of an import duty on tires has not to my knowledge been met by rejoinders to the effect that such a duty would prove injurious to the rubber trade. In the case of other classes of goods, such as steel, silk and lace, there are strong advocates for no disturbance of the status quo. Candidates who at heart are not strong protectionists are pleased to have rubber works in their constituencies. Especially is this the case in Lancashire, because the cotton manufacturers are also interested.

Condition of the British Tire Industry

The following figures were given by a Lancashire conservative candidate. Twenty-five per cent of the people formerly engaged in making tires, he said, were now unemployed. The import of rubber tires to England in 1922 came to £5,500,000 in value, and 17,000,000 pounds of yarn were used in their manufacture, sufficient to keep eight or nine English cotton mills each employing 400 hands in full work for a year. These figures may or may not be correct, few candidates being able to speak at first hand and having to depend upon figures supplied to them. Their substantial accuracy, however, may be accepted, and it is made clear that the cotton trade is more largely interested than the average tire purchaser imagines.

Apropos of this, it is rather curious how goods with perhaps only 10 per cent of rubber in them are sold as rubber goods, the textile or other material making up the odd 90 per cent not coming into the nomenclature.

No Export Market for British Tires

Sir Robert Horne, a late chancellor of the exchequer, speaking at Glasgow, said that there was no export market in the world where the British rubber industry could compete against the protected countries. The chief exporters of tires today, he said, were the French and Americans. Of the whole output of tires, valued at £16,000,000, these two protected countries had the biggest shares, France 40 per cent, America 25 per cent, and Great Britain 12 per cent.

In this connection it might be mentioned here that the report of Stepney Tires, Limited, for the year ended September 30 last shows a net loss of £35,453, the directors attributing this poor result to the unrestricted imports of foreign tires free of duty. On the analogy of what has occurred in the case of the light or luxury motor car it is claimed by some prominent speakers that if tires are taxed the home manufactures will be developed. After M. Kenna put the 33⅓ per cent tax on imported cars the home manufacture increased largely, although the foreign cars continued to come in. On the other hand the number of hands manufacturing the heavy unprotected cars had gone down from 14,000 to 5,000.

Will a Duty on Tires Accomplish Its Purpose?

Arguing by analogy, of course, frequently leads to errors, and a point made on the opposite side is that at the cessation of war the government put a large number of commercial cars on the market at a time when business generally was slack. The important point, however, about the tire imports is as to whether the duty will stop them coming in. If it does not stop them, it does not seem clear that the home manufacturers will derive much benefit, and if it does stop them the tax will not be collected and so no benefit will accrue to the farmers who are to get their wheat subsidy out of the taxation of imported manufactured goods.

To turn at random to an article used to a considerable extent in the rubber trade, out of our total consumption of barytes in 1922 of 70,784 tons we imported 34,245 tons or nearly half, whereas during the war years, as the mineral could only be got from abroad with difficulty, we satisfied practically the whole of our requirements. As there is no shortage of the mineral at home the mine owners would seem to have a strong case for protection, though barytes users may look upon this with some misgivings. The foregoing, of course, is subject to any argument that may be adduced to the effect that barytes as used in the paint, rubber and paper industries is really a raw material and therefore can claim free admission.

To revert for a moment to tires, a cabinet minister said in one of his speeches that he had had a communication from the Moseley Tire Co. (presumably David Moseley & Sons, Limited) stating that in the last two years, owing to undue foreign competition, they had had to discharge half their work people, while the remainder had only been earning a bare existence. This probably refers to tire hands alone.

Institution of Rubber Industry

At the second annual dinner of the Institution held on November 16, following the annual meeting, the president, Alexander Johnston, was in the chair and in giving the toast of the Institution said that the old spirit of antagonism which was very rife years ago in the different sections of their industry had almost disappeared, and in its place had come the sweet spirit of reasonableness. It seemed that they were the pioneers of this spirit in industry because in other industries, notably the textile, the various sections had not come together. Indeed, they found the spinners running down the weavers and the weavers blaming the bleachers, and so on. There was nothing quite so bad as secrecy, which covered up inefficiency, and he looked forward to the day when they would be in exactly the same position as the Americans and throw open their works to competitors.

D. F. L. Zorn, in proposing the allied association, made another reference to his Rubber Parliament idea. So long as personalities, he said, were not entered into, a clash of opinion was all for the good and he prided himself on his part in bringing about a clash of opinion between the shareholders and directors of plantation rubber companies on the question of the publication of costs.

In responding to the toast E. Eric Miller, in the absence of Mr. Bayers, chairman of the Rubber Growers' Association, said that men of intense convictions, like Mr. Zorn, were apt to lose their sense of proportion and he strongly disapproved of the way in which the Shareholders' Association had presented their demand for the publication of costs, though there was something to be said for the principle involved. Sir Stanley Bois, in proposing the President, referred to the little disagreement that had existed regarding the restriction of output. This he was glad to think was passing away because manufacturers were realizing that producers were trying to save a great industry which if it were not saved would involve the manufacturers in its ruin.

At the annual meeting the chairman, referring to the increase of membership to about 500, mentioned that while many firms of note had come in, others of equal note still remained outside. No doubt he had in mind the Manchester district, where the

principal firms remain outside, thus depriving the section of those associates and graduates who go to swell the attendances at Birmingham and Edinburgh. This point should not be overlooked by those who have contrasted the small attendances at the Manchester section with the larger gathering at other sectional meetings. In referring to the diploma scheme, he mentioned that it had been agreed to confer the distinction not only upon those with a scientific and technical training, but also upon the practical man of long experience if he saw his way to qualify.

Among those on the new council are Colonel Lealy Clarke, Geo. Spencer Moulton & Co., Limited; Noel Cow, P. B. Cow & Co., Limited; H. Foulds, Callenders Cable & Construction Co., Limited; E. Healey, W. & A. Bates, Limited; and Sir Edward Worthington, K. C. V. O.

Manchester Section

On November 19 at the Manchester Section, F. H. Hewlett being in the chair, Mr. Fryer, a chartered accountant, read a paper on "Costing in the Rubber Industry as an Essential Factor to Successful Production." It was mentioned that there was a general tendency to reduce labor costs, though this increased labor costs. Costing, he said, had a moral effect in the factory in keeping men up to the mark. The question of expense had to be reckoned with; when trade was good the manufacturer did without it; when trade was bad he was against the expense involved in instituting a costing scheme. Like a previous paper on "Oil Fuel" this paper had the defect of having no direct reference to the rubber trade, and although listened to with interest there was no discussion, even the vote of thanks being proposed and seconded from the chair. After this formality, however, Mr. Payne, of the Leyland & Birmingham Rubber Co., Limited, remarked that it was not easy to discuss the paper without careful consideration.

Company News

A gratifying recovery is shown in the accounts of the Silvertown India Rubber Works for the year ended August 31 last, there being a net profit of £96,343 on the year's trading. This allows of the payment of a dividend of 5 per cent tax free on the ordinary shares, £39,278 going to the reserve fund and £10,657 being carried forward. Although some of the funds available came from refund of E. P. D. there has also been a general improvement in trade. The above profit compares with a loss of £94,406 in the previous year and a loss of no less than £445,461 in eleven months of the year 1920-21.

The Palmer Tire Co., Limited, which is closely connected with the Silvertown company shows a profit of £5,382, allowing with the carry forward from the previous year of a 10 per cent dividend in the ordinary shares free of tax. The report contains the now common reference to the business having been unfavorably affected by foreign competition, though home competition is also mentioned as an adverse factor, cord tires being now made by several firms.

Considerable extensions are being made at the Ardsall Lane Works of the Greengate & Irwell Rubber Co., Limited, whose last report, like that of the Silvertown company, showed a great recovery from the effects of the trade slump. More room will now be available for the balata belting department, as also for the mechanical rubber section.

Latex Development, Limited, has been formed in London with a capital of £6,250 in 5,000 ordinary £1 shares and 25,000 deferred 1 shilling shares to acquire the benefit of certain existing inventions of H. Bromfield and R. Russell and to deal in rubber, rubber latex and rubber goods. The nature of the inventions is not disclosed. Among the first directors are Sir Edward Penton, K. B. E., and D. F. L. Zorn.

The payment by Siemens Bros. & Co., Limited, of the dividend on the 10 per cent cumulative preference shares for the year ending June 30 last has been made. The profits for 1922 were only £14,041, against £268,433 for 1921, and the balance brought forward had to be drawn upon for the payment of debenture interest. Things now show much improvement and the large expenditure of about £200,000 is being incurred on cable shop additions.

British Notes

The Midland Rubber Goods Manufacturing Co., Limited, Ryland street, Birmingham, England, has recently purchased from the receiver the business established some thirty years ago as The Midland Rubber Co., Limited. Factory operations have been continued during the managership of the receiver and it will be the endeavor of the new organization to maintain the position that the old company held in the rubber trade. Few changes are being made in the executive personnel, and with the reorganization of the works the company will be in a better position than formerly to develop its production of tires and rubber goods of various descriptions. George F. Colledge, associated with the original company for more than twenty years, becomes secretary and general manager of the new concern.

Members of the India Rubber Manufacturers' Association, Limited, have notified their customers that all prices for hose, belting, packings and all general mechanical rubber goods are advanced by 10 per cent.

R.G.A. TO OFFER AWARDS AT INTERNATIONAL RUBBER EXHIBITION

Four separate awards, of medals, cups, or cash prizes, are to be offered by The Rubber Growers' Association, Inc., at the coming International Exhibition to be held April 1 to 16, 1924, in Brussels, Belgium. The awards are to be given for the best commercial samples of plantation rubber, crêpe sole rubber, and also for the best displays of articles made from crude rubber or latex. Entries for the competition will close March 15, 1924, and those desiring further information should address The Awards Committee, The Rubber Growers' Association, Inc., 2, 3, & 4 Idol Lane, Eastcheap, London, E. C. 3, England.

The Rubber Trade in Europe

By Our Regular Correspondent

Austria

The Vereinigte Gummiwaren Fabriken Harburg-Wien, Vormals Menier-J. N. Reithoffer, Wimpassing, is the largest rubber manufacturing concern in Austria. At present most of the departments are working only part time. Among the articles exported by this firm are hard rubber combs bearing the trade name "Matador." These combs, however, are reported to be inferior to German makes, such as Excelsior and Hercules, which are preferred although transportation and customs charges cause them to be somewhat more expensive than local brands.

French Crude Rubber Market

In connection with the organization of the rubber market at Paris, a syndicate has been formed known as the Syndicat du Commerce de Caoutchoucs Bruts, Paris. President of the syndicate is M. Georges Schwob (d'Héricourt), president of the Société Française pour le Commerce avec les Colonies et l'Etranger; vice president, M. Emile Alcan of Alcan et Cie; treasurer, M. H. Poncin of Poncin fils, Ducaset Cie. The members are: Jules Destombe, president of the Syndicat du Commerce des Huiles; Octave Homberg, administrator of the Banque d'Indo-Chine; Maurice de Lagotellerie, president of the Compagnie Française in Brazil, Lucien Morellet of Morellet Fils et Cie, and Theodore Schuler of Marius et Lévy.

The first act of this syndicate has been to elaborate a project for regulating the crude rubber market so that on the one hand French manufacturers will be able to cover their needs directly in France without having to go to foreign markets, particularly

to London, while on the other hand French producers will be helped easily to find an outlet in France for their product.

In 1922 France imported 28,000 tons of crude rubber for home consumption, and 3,600 tons of this came from Indo-China. Now this colony produced about 6,000 tons during 1922 and this output is increasing. Therefore it is necessary to do something to draw this rubber to France and the creating of a market in Paris was one of the measures taken with this end in view.

Germany

The difficult economic conditions obtaining in Germany at present have once more called attention to the "Kartell" system. In recent years the Kartells chiefly occupied themselves in fixing prices and terms and frequently abused their power. The system has always been the subject of severe criticism from certain quarters and while government supervision has been urged by some, others are satisfied with nothing less than total abolishment of the system.

Now the government has taken up the matter and it has decided that the Kartells are of far too great importance in connection with production, sales and distribution to be exterminated and that they still have a big part to play in the economic future of the country. However, abuses must be prevented and measures have been passed, including a Kartell court, which will insure efficient control of the system.

German Emergency Notes

When the Bank of Germany found itself incapable of meeting the demand for notes, owing to the rapid depreciation of the mark, many of the leading manufacturers, including the Continental

2 Million Mark Emergency Note of the Continental Caoutchouc-und-Gutta Percha Co., Hannover, Germany

Caoutchouc-und-Gutta Percha Compagnie, Hannover, were forced to issue Emergency Notes (Notgeld) with which to pay their employes. These notes were accepted by local tradesmen who later presented them for conversion into regular notes to the respective bankers or account departments of the various firms. As soon as circumstances permitted, which was after a few weeks, the emergency notes were called up, but had to be reissued some time later when regular notes again become scarce.

Gold Basis of Wages

The question of placing wages in the rubber industry on a gold basis has received a good deal of attention lately and much has been said for and against the measure. When wages on this basis are considered, the standard of the last year before the war, 1913, is generally looked to. However this standard cannot be accepted as it is, as the following figures of wage scales and considerations of hours, output and general economic situation will prove:

Figures for 1913 show that the average number of working hours per week for 86 factories in the rubber industry were 55½. These factories employed altogether 19,521 men, while 78 of them employed 7,542 women in addition. The weekly wages received by workers engaged in preparing raw material were: 21.39-25.22 marks for men; 11.32-12.83 for women, and 10.90 to 13 marks for minors. In the manufacture of soft rubber goods the rates were: 21.17-26.26 marks for men; 11.11-14.66 marks for women and 9.40-11.93 for minors. In hard rubber goods: 20.26-26.91 for men, 10.83-12.93 for women, 8.88-12.69 for minors; gutta percha goods: 21.33-28.15 for men, 10.58-14.80 for women; warehouse and delivery: 21.33-28.15 for men, 10.58-14.80 for women, 8.83-12.02 for minors. The average hourly wage in the rubber industry worked out at 37.5-48 pfennigs, 20.5-25.5 pfennigs, 17-22 pfennigs for men, women and minors, respectively.

At present, while the proportionate output is at least equal to that obtaining before the war, the workmen work only 8 hours a day. Furthermore the economic conditions in Germany were much better in 1913 so that present circumstances would permit the payment of only two-thirds of the wages paid in 1913. On the other hand, the cost of living is steadily increasing and the gold index in October, 1923, was 125 as compared with 100 in 1913, so that the gold wage of 1913 before it can be used as basis for wages at present must be brought to the level of the purchasing power of gold today. The wages at the new level must be reduced by one-third, representing the individual tribute for the lost war. But if the laborer is to make both ends meet, the 55½-hour week must be introduced again, and that is a problem that is not so easily solved.

German Notes

The Kabelwerk Oberspree, Oberschöneweide near Berlin, celebrated its 25th anniversary on July 1, 1923. After its formation in 1897 it undertook the manufacture of insulated wires, hard and soft rubber and Mikanit for the apparatus factory of the A. E. G. The following year cables were also made and before long the Kabelwerk Oberspree took the lead in the manufacture of high current cables. At first cables up to 3,000 volts were made with jute insulation. A circular of 1899 mentions cables of 6,000 and 10,000 volts in which the copper conductors were insulated first with paper, then rubber, and finally with impregnated jute. In 1911-1913 a cable net of 30,000 volts and length of 250 kilometers was laid for the Berliner Elektrizitätswerke.

Since the end of the war cables with tension up to 50,000 volts have been produced. The firm also makes installation wires, telephone wires, and apparatus for wireless telegraphy.

Of insulating materials, the concern now produces hard rubber, Stabilit, Vulkanashest and Tenacit. The metal works comprise a foundry, plate and band-rolling mills, tube rolling mills, rod-pressing and drawing mills. Copper, brass, bronze, aluminum and light metals and alloys are worked in the metal factory.

Russia

According to the Moscow *Pravda* of July 24, 1923, the three main rubber factories, Treugolnik Bogatyr, and Kautchuk, employed 11,700 persons in November, 1922, 12,633 in January, 1923, 10,500 on May 1, 1923. During the period October, 1922, to May, 1923, inclusive, the estimated production was 7,508,100 pairs of rubbers, 377,400 tires and tubes, 22,334 poods of belting and hose and 564,000 square arshines of rubber cloth. The output of October-February, 1922-23 was valued at three times more than that for October-February, 1921-22. The Bogatyr closed for repairs on May 21 and the rubber shoe division of the Treugolnik has also stopped temporarily. Production of tires and tubes is being increased.

The Rubber Trust expects its exports for 1923 to include 2,000,000 pairs of rubbers, while imports will comprise 400,000 poods of crude rubber; cloth, yarn and cotton worth 3,300,000 gold roubles and chemicals worth 1,250,000 gold roubles.

JAVA AND MADURA COMBINED IMPORTED DURING THE YEAR 1919 approximately 201,000 motor car tires, 248,000 in 1920, 222,000 in 1921, and 248,000 in 1922. The chief source of supply was Japan, followed by the United States and France.

The Rubber Trade in the Far East

By Our Regular Correspondent

Malaya

AVAILABLE statistics of the shipment of rubber during the first year of restriction show that the total exports from Malaya were 249,259 tons; of this 62,927 tons were foreign imports, chiefly from the Dutch East Indies, leaving net exports of 186,332 tons. In the restriction area, which does not include Singapore and Penang, stocks licensed October 31, 1923, amounted to 7,253 tons, and production exports 159,958 tons. Stocks held outside the restriction area were 19,121 tons.

The *Straits Budget, Rubber Supplement*, weekly edition of the *Straits Times*, has an interesting comparative analysis of the figures for the periods November-October, 1921-1922, and November-October, 1922-1923. There is a slight difference between some of the *Straits Times'* totals and the Controller's totals, but that does not affect the importance of the analysis and conclusions. From this analysis we learn the following:

Net Malayan exports over 1921-22 amounted to 213,975 tons; for 1922-23 this came to 186,239 tons, showing a decrease of 27,736 tons. The standard production for Malaya was 274,000 tons, and the actual exports 186,239 tons; but for nine months of the restriction year the restricted allowance was 60 per cent or 123,300 tons and for three months 65 per cent, or 44,520, so that the actual export should have been 167,820 tons, or 18,419 tons less than really was shipped by the peninsula. This excess, however, is accounted for by stock held on October 31, 1922, export of which was permitted.

As for total exports, these were 248,281 tons, against 244,380 tons in 1921-22, an increase of 3,901 tons; this is explained by the considerably larger shipments from the Dutch colonies, which jumped from 30,405 tons in 1921-22 to 62,042 tons in 1922-23.

What is giving cause for serious uneasiness is not so much the increase of foreign shipments coming into Malaya, which was expected, but that the aim of restriction may be thwarted owing to the unduly high figure at which standard production has been fixed. The Stevenson Committee estimated the world production of plantation rubber at 335,000 tons in 1920, of which Malaya was estimated to produce 57 per cent, or 15,912½ tons per month. The standard actually adopted was 6,917½ above this figure.

In addition to this, the restriction percentage is too low. Malaya asked for 50 per cent restriction until the price rose to 1s. 6d., and got 40 per cent, while during three months there was only 35 per cent restriction.

Despite all this, the results of 1922-1923 are not considered unfavorable. The net value of Malayan rubber exported in 1922-23 was $222,063,312 against $137,525,321 the preceding year, showing a gain of $84,537,991.

The average prices obtained since restriction are more than double those received before restriction, thus: Average price over the quarter July to September, 1922, was 25 cents; over November-January, 1922-23, with 40 per cent restriction, 51½ cents; over February-April, 59 cents; over May-July, with 35 per cent restriction, 49 cents; over August-October, with restriction again at 40 per cent, 50½ cents.

However, the opinion is growing that if 1923-24 is to show results at least as favorable, restriction will have to be considerably tightened.

The Rubber Outlook and Restriction

Growing uneasiness is felt over the rubber situation, and for the following reason: Now is the big buying season for rubber manufacturers, but in spite of this and the reported prosperity in America, rubber stocks in London have steadily increased during the last four months and the price has fallen. This is a bad sign and to many spells a repetition of the slump in 1920, but one which, it is feared, will be still more serious. The condition is laid to the high standard of production on which restriction is based, as a consequence of which we have really 20 per cent restriction and less. As statistics in the first part of this letter show, the Dutch can easily beat that. What is of more importance is that the production standard has permitted an excess of rubber to be thrown on the market whereby manipulation and juggling were facilitated.

In different quarters the opinion has been expressed that the increasing stocks in London are nothing else but a manifestation of rubber juggling on the part of Americans. The way this is being done is explained thus: In the early months of restriction, Malaya sent out too much rubber, which, coupled with the Firestone scare-cry of shortage, led to Americans buying more than they needed. Americans soon discovered that there was no need to fear a shortage and decided to juggle the market, which they know can best be accomplished if there are big stocks in London. To this end they buy in Malaya, ship to London, and, as they have sufficient reserves to work on, draw as little from London as they safely can. The fact that exports to America have been decreasing since May, 1923, while simultaneously shipments to England have risen from 26,305,500 pounds over the four months ended May to 43,814,100 pounds for the four months ended September, helps to confirm this view of the matter.

But it is pointed out that there can be no manipulations if there is no excess rubber, and thanks to the high standard, too much rubber is actually being produced. As this standard has not been altered and the restriction percentage is again 40 per cent, what amounts to over production will continue. It is estimated that the total amount of rubber available during the first year of restriction was about 353,000 tons, which with stocks put at not less than 100,000 tons, brings the figure to 450,000, in round numbers.

Since no forecast of consumption exceeding 360,000 tons is considered trustworthy, it appears that we are entering the second year of restriction in scarcely better shape than the first. And what the situation is likely to be if America continues to draw on reserves while planters pile up stocks in London, is not pleasant to imagine.

Small wonder then that with such thoughts in their heads local producers are filled with anxiety. Once more the Dutch are being asked to join restriction and avert ruin of the rubber industry. People here would be satisfied if the Dutch consented to restrict by half the rate in force in Malaya. Restriction, it is insisted, has not been given a fair chance.

The exportable percentage should be reduced to 50 per cent at least, it is urged. Furthermore, it is asserted, on a restricted output the Stevenson maximum price of 1*s.* 6*d.* is too low; the price should rise and fall with the increase or decrease of the restriction percentage and the Stevenson scale be modified accordingly. The new scale would be as follows:

All-In Cost Pence	Per Cent Restriction	Standard Price, Shillings and Pence
11½	65	1.8½
11	60	1.8
10½	55	1.7½
10	50	1.7
9½	45	1.6½
9	40	1.6
8½	35	1.5½
8	30	1.5
7½	25	1.4½
7	20	1.4
6½	15	1.3½
6	10	1.3

In explanation it should be added that it is assumed that 9*d.* is a fair and necessary profit per pound; that with 40 per cent restric-

tion all-in cost is 9*d*. per pound; that this cost shall rise or drop by one halfpenny per pound with each rise or fall of 5 per cent in restriction rate; that the rate of restriction increases 5 per cent if the average price in a given quarter is less than the standard price for the quarter, but decreases by not more than 10 per cent in the opposite case. Finally, if the average price exceeds 1*s*. 3*d*. for two consecutive quarters during which restriction has been 10 per cent, there shall be no restriction the next quarter.

Whether anything will come of these suggestions it is hard to say as so far all suggestions for stiffening restriction have been vetoed by London. This is causing much bad feeling toward London as well as toward the local government, which is blamed for not acting with the necessary vigor. It is claimed that Singapore should have more to say in matters of restriction since it is not only the biggest rubber market in the world but has more accurate knowledge of planting and marketing of rubber than any other place.

Young Producers

While on the one hand there is the demand for more stringent measures of restriction, on the other young producers are strongly agitating to have the Duncan scale revised in their favor. At a recent meeting the suggested scale for holdings over 25 acres was: 1919 plantations—60 pounds per acre; 1918—180 pounds; 1917—240 pounds; 1916 and older plantations—300 pounds per acre provided there is no allowance for the 1919 rubber, unless the assessment committee finds that 60 per cent of the trees have reached the tapping stage. Total standard production of an estate may not exceed 450 pounds per acre.

Netherlands East Indies

Of late efforts are again being made by Malaya to get the Dutch to join restriction. The *Straits Times* is alternately dangling bait—telling the Dutch that they can make much more money by restricting than by keeping aloof—and prophesying dreadful things if through continued capacity production by the Dutch, for one thing, restriction should fail.

In a local paper, the *Sumatra Post*, a well-known planter, W. Percy Pinckney, has been writing on the subject, also urging the Dutch to take up restriction. But it does not appear that these efforts will be very successful.

In the first place, there is in certain quarters the fear of what America might do if restriction should be adopted here. Then the question is put forward as to how manufacturers and consumers would fare. This is a point that has been discussed by the editor of the Dutch paper mentioned above. He thinks that any scheme for regulating the supply of rubber must not only take into account the capital invested in the plantations but also the labor connected therewith, the requirements of consumers, manufacturers and dealers. Such a scheme must benefit all these in the proper proportions. The initiative for such a scheme must come from Malaya, which already took the first step in restriction. When Malaya is ready with a plan answering the above description, and requires cooperation, the Dutch will not hesitate to do their share.

As for the benefits already derived from restriction, the *Sumatra Post* is more than a little sceptical about them. On the face of it, it would seem that restriction had succeeded, but this could only be proved if it appeared that there had actually been a curtailment of exports brought about by the measure. At the time the article was written, the periodical in question had not yet had the opportunity to study statistics for the year of restriction, and it is to be feared its attitude would only have been stiffened had it known, what has just been learned, that the exports during 1923 were actually higher than during the previous year. To be sure this was largely due to the fact that the Dutch Colonies shipped 30,000 tons of rubber in excess of what had been shipped to Malaya the year before.

At all events the paper quoted is of opinion that there were other causes for the rise in rubber prices that had nothing to do with restriction. Stabilizing prices of rubber is not as simple as all that—cut down exports and up go the prices. There are too many different things to be considered in rubber. In the first place it is not a monopoly; it can be planted anywhere in the tropics. Then there are all sorts of internal conditions in the consuming countries that may cause either a sudden increase or decrease in the demand. For example, due to improved roads and improved methods of manufacture the life of a tire has been increased, so that less rubber is needed.

On the other hand, new uses for rubber are steadily being found, which would tend to raise the consumption of rubber. In short, rubber being what it is, the *Sumatra Post* cannot agree that restriction lifted rubber out of the dumps. And it seems that many more agree with him.

Restriction and Native Rubber

There is, however, another question to be considered in the matter of restriction in the Dutch Colonies. If Malaya experienced great difficulties in making the native producers toe the mark, here the obstacles to even partially successful enforcement among the native population would be well-nigh overwhelming. To begin with, the natives were practically ordered by the government to plant Hevea, and having once enforced this order how can the government turn around and tell the natives to stop tapping?

On the other hand, the natives own a very large number of trees; estimates run up to 50,000,000. The exact output is not known, but it is a fact that foreign rubber shipments to Malaya were over 60,000 tons during 1923 against some 30,000 tons the year before, and most of this rubber came from native holdings in the Netherlands East Indies. Therefore, if the local government wished to avoid trouble and did not interfere with the production of the natives but passed a restriction law to be adhered to only by European estates, the result would be that the natives would tap all they could to benefit as much as possible by any rise in price that combined Dutch and English restriction might bring about.

Taking into account the fact that young trees are continually added to the number of tappable trees as soon as it pays to tap them, we should find the natives throwing large quantities of rubber on the market, which might result in spoiling prices for the restrictors.

In spite of all this, there are British optimists who think the Dutch will eventually take the much discussed step. Some build their hopes on the fact that the budget for the Netherlands showed an adverse balance, which they trust will lead the government to increase taxes, especially of rubber producers who are profiting by not restricting. To escape this, it is deduced, planters will urge that restriction be enforced.

Government Attitude Toward Planting

Unless the government should suddenly adopt an opposite policy it seems hardly probable that there will be any further taxation of rubber at present. To be sure, the government, up to a little while ago, taxed the producers for all they were worth. But it has recently changed its attitude. It has been officially announced that certain special taxes are to be removed. A committee is busy revising the taxing system which it is expected will be considerably simplified.

This change of attitude appears to be due to repeated protests and warnings that foreign capital is overlooking the Dutch Colonies. At any rate, while the government declared last year that it would not undertake to have conditions for foreign capital in other countries investigated, now such a study has been ordered. Furthermore, the much debated question of abolishing the penal sanction in connection with contract labor seems to be nearing a satisfactory solution. There are to be some minor changes, but on the whole the prevailing system will probably be maintained.

Apparently all this has encouraged foreign capital, for it is learned that some Americans have arrived here to investigate the further development of parts of Sumatra for rubber planting with American capital.

Recent Patents Relating to Rubber

The United States

Issued* November 13, 1923

NO. 1,473,623 Tire mounting. W. T. Gulledge, Matthews, North Carolina.

1,473,680 A blowout section for tire casings. C. C. Marble, Bradentown, Florida.

1,473,767 Floor or wall covering. L. J. D. Healy, assignor to Wright Rubber Products Co., both of Racine, Wisconsin.

1,473,768 Reinforced ribbed pneumatic tube. L. W. Hottel, Chicago, Illinois.

1,473,810 Combined tire and rim. W. Cambridge, Berwyn, Illinois.

1,473,916 Rainproof garment. C. A. Place, assignor to New York Mackintosh Clothing Co., both of New York, N. Y.

1,473,919 Roofing element. H. Abraham, New York, N. Y., assignor to The Ruberoid Co., a corporation of New Jersey.

1,473,938 Valve protecting and operating device for pneumatic tires. W. R. Royer, Wilkes-Barre, Pennsylvania.

1,474,005 Windshield wiper. P. Sherman, Toledo, Ohio.

1,474,011 Self-Sealing tire tube. Harley H. Allyn, Atlantic City, New Jersey.

1,474,085 Inner tube. J. R. Meredith, Atlanta, Georgia.

1,474,099 Automatic tire pressure gage. R. L. Whipple, D. P. Rockwell, and C. C. Featherstone, Lehi, Utah.

1,474,160 Tire valve. F. E. Nugent, Philadelphia, Pennsylvania.

1,474,215 Demountable brake lining. H. Vanderhoof and W. Gillig, San Francisco, California.

1,474,270 Quick-Detachable pipe joint. A. P. Lewis, assignor to The Miller Rubber Co., both of Akron, Ohio.

1,474,286 Hard rubber flush ball for water closet tanks. J. Phillips, assignor to the Luzerne Rubber Co., both of Trenton, New Jersey.

Reissues

15,701 Vulcanizer. N. M. Anderson, assignor by mesne assignments, to Thomas Bemis, Sr., T. Bemis, Jr., and Ruth Bemis, trustees of Anderson Steam Vulcanizer Co., a Real Trust, all of Indianapolis, Indiana.

Issued* November 20, 1923

1,474,340 Halter strap with solid elastic body. F. L. Albin, Kiowa, Colo.

1,474,387 Puncture-proof liner for tires. G. G. Schoneberger, Oak Park, Ill.

1,474,429 Pneumatic tire. L. W. Baldwin, Jersey City, N. J.

1,474,481 Resilient safety tread. C. R. King, assignor to Norton Co., both of Worcester, Mass.

1,474,710 Sponge-rubber nasal plugs. R. Grier, Hazelton, Pa.

1,475,023 Tire valve. S. S. Moore, assignor of one-half to R. D. Miller, both of Cleveland, Ohio.

1,475,042 Composite heel. P. Arthur, Chicago, Ill.

1,475,077 Extensible and retractable joints for moving platforms, employing a connecting band of rubber. H. Mangin, Armentieres, France.

1,475,094 Solid tire. J. C. Tuttle, assignor to Firestone Tire & Rubber Co., both of Akron, Ohio.

1,475,101 Rubber brush for shaving or massaging, etc. R. M. Withecombe, Sydney, New South Wales, Australia.

1,475,102 Rubber toothbrush. R. M. Withecombe, Sydney, New South Wales, Australia.

1,475,140 Tire. T. Phaneuf, Washington, D. C.

1,475,147 Tire flap. W. E. Shively, assignor to The Goodyear Tire & Rubber Co., both of Akron, Ohio.

Issued* November 27, 1923

1,475,210 Airship. R. H. Upson, assignor to The Goodyear Tire & Rubber Co., both of Akron, Ohio.

1,475,225 Cushion tire. E. H. Dickensheet, San Francisco, Calif.

1,475,249 Device to unseat tire valves. L. B. Solemink, San Francisco, Calif., assignor to A. Schrader's Son, Inc., Brooklyn, N. Y.

1,475,302 Tire armor. L. Hitchcock, Meridale, N. Y.

1,475,326 Liner for tire casings. A. J. Stephens, Kansas City, Mo.

1,475,412 Rubber heel. M. W. Selby, assignor to The Selby Shoe Co., both of Portsmouth, Ohio.

1,475,414 Detachable armrest with rubber core. E. G. Simpson, Detroit, Mich.

1,475,427 Cushion tire of the chamber type. J. Cairnes, South Norwood, England.

1,475,487 Adjustable clamp for rubber pipes, etc. R. J. Hammond, London, England.

1,475,488 Resilient wheel and cushion tire. M. Harloe, assignor to the Harloe Tire Co., Inc., Winchester, Virginia.

1,475,771 Pneumatic mattress. E. W. Aldridge, Vincent, Oklahoma.

Issued* December 4, 1923

1,475,925 Suspension tire. F. W. Adsit, St. Paul, Minnesota.

1,475,991 Baseball mask, with sponge rubber shock absorbing ring. H. Goldsmith, assignor to the P. Goldsmith Sons Co., both of Cincinnati, Ohio.

1,476,054 Valve cap. P. G. Cole, Forest Hills, New York.

1,476,111 Inner tube for tires. M. E. Simes, Bendigo, Australia.

1,476,286 Inflatable swimming garment. J. Czyzykowski, Harrison, N. J.

1,476,288 Rubber heel. W. Enoch, Worcester, Mass.

1,476,299 Infant's garment protector. G. K. Guinzburg, assignor to I. B. Kleinert Rubber Co., both of New York, N. Y.

1,476,348 Rubber-covered shoe lace. T. W. Miller, assignor to The Faultless Rubber Co., both of Ashland, Ohio.

1,476,436 Resilient top lift for shoe heel. J. W. Aymar, Jr., New York, N. Y.

Issued* December 11, 1923

1,476,826 Gaiter. F. H. Martin, Akron, Ohio, assignor to The B. F. Goodrich Co., New York, N. Y.

1,476,915 Arch support. R. P. O'Donnell, Chicago, Illinois.

1,477,007 Rubber and metal horseshoe. F. C. Robertson, Spokane, Washington, and P. P. Rooney, New York, N. Y., assignors by mesne assignments to Rubber-Metal Horse Footwear, Inc., Buffalo, N. Y.

1,477,218 Guimpe with dress shields. V. Guinzburg, assignor to I. B. Kleinert Co., both of New York, N. Y.

1,477,331 Cushioning device for typewriter feet. A. B. Ely, assignor to Corona Typewriter Co., Inc., both of Groton, N. Y.

1,477,357 Elastic anklet and arch retainer. F. H. Jensen, Everett, Mass.

1,477,383 Arch support. H. C. Pfister, Great Falls, Montana.

1,477,425 Tire liner. R. F. Cataldo, Chelsea, Mass.

1,477,442 Armored tire. H. H. Harris, Red Bank, N. J.

1,477,453 Cushion tire. B. H. Schreiber, Galveston, Texas.

1,477,506 Inflatable-tube swimming device. J. A. Lawler, Paterson, N. J.

1,477,516 Golf ball. T. W. Miller, Ashland, Ohio.

1,477,518 Cushion tire. Cadet Noel, Levallois-Perret, France.

The Dominion of Canada

Granted November 13, 1923

235,525 Reducing garment. B. Cervelli, San Francisco, California, U. S. A.

235,546 Inking roller for printing presses. W. C. Hart, New York, N. Y., U. S. A.

235,621 Rubber tooth or massage brush. R. M. Withycombe, Sydney, New South Wales, Australia.

235,626 Shoe with rubberized boot top. The Ames Holden McCready, Ltd., Montreal, Quebec.

235,628 Tire and fabric therefor. The Canadian Consolidated Rubber Co., Ltd., Montreal, Quebec.

235,693 Douche nozzle. L. Becker, Los Angeles, assignee of J. D. Mouser, Venice, both in California, U. S. A.

Granted November 27, 1923

235,881 Syringe. H. G. Carter, Detroit, Michigan, U. S. A.

235,889 Air bed. M. M. Dessau, London, England.

235,890 Cushion tire. M. N. A. Develay, Paris, France.

235,941 Elastic seal for hydraulic apparatus. E. L. Oliver, Piedmont, California, U. S. A.

235,957 Pneumatic boot tree. T. Taylor, Cambridge, New Zealand.

235,969 Hermetic seal of unvulcanized rubber. F. W. Stockton, assignor to the Aluminum Co. of America, both of Pittsburgh, Pennsylvania, U. S. A.

235,974 Cue with hard rubber covering. H. F. Davenport, Chicago, Illinois, and M. J. Whelan, Muskegon, Michigan, assignors to The Brunswick-Balke-Collender Co., Chicago, Illinois, all in the U. S. A.

Granted December 4, 1923

236,044 Emergency tire. J. W. Hannon and C. A. Notman, both of Detroit, Michigan, and W. T. King, Alliance, Ohio, all in the U. S. A.

236,055 Valve for pneumatic tires. A. E. Bronson, Cleveland, Ohio, U. S. A.

236,056 Resilient wheel with rubber buffers. I. W. Burns-Lindow, Selkirk, Scotland.

236,128 Air tube for pneumatic tires. The McLeroth Pneumatic Tire Syndicate, Limited, assignee of T. B. McLeroth, both in London, England.

236,169 Puncture-proof shield for pneumatic tires. M. Kelly, assignee of A. Manvers, both of London, England.

Granted December 11, 1923

236,201 Armor for tires. S. Andrews, New York, N. Y., U. S. A.

236,212 Elastic knee bandage for athletes. J. J. Cartledge, Guelph, Ontario.

* Under Rule No. 167 of the United States Patent Office, the issue closes weekly on Thursday, and the patents of that issue bear date as of the fourth Tuesday thereafter.

Chemical Patents will be found on page 233, Machinery and Process Patents on Pages 236-237

236,283 Protective tire. W. Sherlock, Winnipeg, Manitoba.
236,322 Cushion tire. The A. F. & C. Tire & Rubber Co., assignee of F. A. Krusemark, both of Roanoke, Virginia, U. S. A.
236,326 Cushion tire. The O. & W. Co., Inc., assignee of M. C. Overman, both of New York, N. Y., U. S. A.

The United Kingdom

Published November 14, 1923

204,095 Pneumatic tire. W. Drury, 10 Lena Gardens, Brooke Green, Hammersmith, London.
204,239 Rubber studs or protectors for heels and soles. J. Treleaven, 5b Morat street, Brixton, London.
204,257 Cushion tire. H. Wade, 111 Hatton Garden, London.
204,279 Disk wheel having solid tire. H. N. Atwood, East Hill Road, Monson, Massachusetts, U. S. A.
204,313 Football. A. Binggeli, 20 Marktgasse, and A. Wirth, 113 Stadthaustrasse, both in Winterthur, Switzerland.
204,333 Bottle stopper employing a rubber ring. T. H. McKeown, Wittenoom street, East Perth, and A. J. Simons, 5 Longroyd street, Mount Lawley, both in West Australia.

Published November 21, 1923

204,408 Pneumatic tire. F. Gibbons, 29 Clairview road, Streatham Park, London.
204,409 Flexible window panel with sponge rubber packing.
204,450 Solid tire with non-skid device. E. A. Sanders, 52 Glyn road, Clapton, and G. H. Sewell, 30 Claverton street, Belgravia, both in London.
204,503 Renewable tire tread. S. Nightingale, Fairmont, The Avenue, Fairfield, Stockton-on-Tees, Durham, and F. W. Russell, 63 Mandale road, Thornaby-on-Tees, Yorkshire.
204,550 Walking stick with rubber shod shield. J. Howell and F. H. Graves, 180 Old street, London.
204,562 A waterproof foot covering for wear over the stocking. W. Scriven, 4 Holly road, Northampton.
204,623 Combined leather and crêpe rubber sole and heel. S. S. Potter, trading as P. Fraser & Co., 1 China Lane, Manchester.
204,717 Pneumatic heel cushions. A. Cardinali, 76 Rue de la Federation, Paris.

Published November 28, 1923

204,733 Rubber brush. C. A. Don, 47 Norfolk road, Brighton, Sussex.
204,812 Vulcanizing apparatus for tire repairs. R. Whiteside, 15 Molyneux road, Kensington, Liverpool.
204,906 Rubber heel. L. Brown and Macintosh & Co., Ltd., C., Cambridge street, Manchester.
204,949 Anti-rattling device for vehicle windows. Charlesworth Bodies, Ltd., C. Steane, S. B. Jackson, and O. J. Critchard, Much Park street, Coventry.
204,957 Rubber welt for rubber soled footwear. F. C. Rubbra, 30 Bostock avenue, and E. T. Moss, 58 Stimpson avenue, both in Northampton.
204,988 Fountain pen with rubber sac. P. Narayan, Bijnor, United Provinces, India.
204,991 Armored tire. F. Creassey, 106 Upper Parliament street, Nottingham.
205,045 Combination pneumatic and solid tire. C. Newman, 202 King street, Newtown, New South Wales.
205,056 Cycle-skate. F. LeBlanc, 51 Avenue de Chevreuse, Clamart, Seine, France.
205,091 Method of making rubber sheets of variegated colors. J. H. Stedman, Braintree, Mass., U. S. A.
205,105 Bougies, catheters, etc. L. M. C. Charnaux, 26 Avenue Victoria, Vichy, Allier, France.

Published December 5, 1923

205,116 Crêpe rubber footwear. Plantation Rubber Manufacturing Co., Ltd., and M. M. Dessau, 14 Mincing Lane, London.
205,161 Tread studs for tires, boot soles, etc. F. W. Hilliar, Station Road, Hayes, Middlesex.
205,186 Cellular hard rubber floats, buoys, etc. J. E. L. Barnes, 34 Castle street, Liverpool. (Miller Rubber Co., Akron, Ohio, U. S. A.).
205,217 Crêpe rubber bib for infants. Plantation Rubber Manufacturing Co., Ltd., and M. M. Dessau, 14 Mincing Lane, London.
205,236 Pneumatic tire pressure gage. S. W. Amphlet, Tudor Works, Ladywood Road, Birmingham.
205,261 Rubber eye bath. E. V. Grimes, 39 Craven Road, Lancaster Gate, London.
205,380 Legging and spat combined, with knee garter. F. B. Dehn, 53 Doughty street, London. (Overall Stocking Corp., 51 East 42nd street, New York, N. Y., U. S. A.).
205,417 Horseshoe with reinforced rubber base. W. H. Giles, 2 Rangemore street, Burton-on-Trent, and J. A. Ross, 2 Waterside road, Stapenhill, both in Staffordshire.
205,455 Crêpe rubber bathing slipper. Plantation Rubber Manufacturing Co., Ltd., and M. M. Dessau, 14 Mincing Lane, London.
205,482 Elastic belts and sock suspenders. W. H. Johnson, 11 Seeley avenue, Arlington, New Jersey, U. S. A.

New Zealand

Published October 4, 1923

50,326 Pneumatic tire. W. Drury, 10 Lena Gardens, Brooke Green, Hammersmith, London, W., 6, England.

Published October 18, 1923

49,209 Knee-protector pad. J. S. Lamont, Edendale, Southland, N. Z.
50,626 Inner tube for tires. P. Le Petit, Rocky Point Road, Rockdale, New South Wales.
50,743 Pneumatic tube puncture repairing composition. E. S. Rowlandson, 246 Dandenong Road, East St. Kilda, near Melbourne, Victoria.

Germany

Design Patents Issued with Dates of Issue

386,104 (July 18, 1922). Tire cover with fabric insert. Dunlop Rubber Co. Limited, London; represented by: Dr. R. Wirth, Dr. H. Weil, M. Wirth, C. Weihe, Frankfurt-am-Main, and T. R. Koenhorn and E. Noll, Berlin, S. W. 11.
386,105 (December 25, 1921). Inner tube. Henry Claude Privett, Los Angeles and Charles Robert Privett and Hollis Franklin Privett, Long Beach, United States; represented by: H. Caminer, Berlin W. 62.
386,109 (June 8, 1922). Cellular tire. Oscar Lindenau, Teltowerstrasse 16, Berlin.
386,444 (March 25, 1923). Rubber Sole. Anton Kurscheidt, Gudenauasse 16, Bonn.
387,010 (November 14, 1922). Hypodermic syringe. Dr. Hermann Metzner, Dessau.
387,012 (June 7, 1922). Vagina-cleaning apparatus. Martin Carus, Krossen, Oder.

Design Patents Issued, With Dates of Issue

855,570 (May 16, 1923). Exchangeable rubber heel. Bruno Martin and Emma Martin, née Teichmann, Langen in Hessin.
855,586 (July 21, 1923). Exchangeable rubber heel. Michael Ochsenkühn, Burgfriedenstrasse 4, and Jch. Stahl, Imhofstrasse 81, Augsburg.
855,652 (August 10, 1923). Rubber heel. Heinrich Dresing, Bad Oeynhausen.
855,767 (July 16, 1923). Rubber nipple with valve. Industrie-Werke Pausa, G. m. b. H., Pausa.
855,832 (August 10, 1923). Rubber heel. Continental-Caoutchouc-und Gutta-Percha-Compagnie, Hannover.
855,833 (August 10, 1923). Rubber heel. Continental-Caoutchouc-und Gutta-Percha-Compagnie, Hannover.
855,834 (August 10, 1923). Rubber heel. Continental-Caoutchouc-und Gutta-Percha-Compagnie, Hannover.
855,884 (July 9, 1923). Bicycle tire cover with specially raised tread vulcanized on to it. Ernst Herkner, Blumenthalstrasse 28, Köln-am-Rhein.
856,074 (August 15, 1923). Hair ribbon with colored decorations of rubber. Flügel & Polter, Leipzig-Plagwitz.
856,118 (July 16, 1923). Inhaler. F. K. Bräutigam, Lorenzstrasse 69, Berlin-Lichterfelde.
856,130 (August 16, 1923). Dental syringe. Blaurock & Kochte, Ilmenau.
856,206 (August 30, 1923) Rubberized fabric, with felt dust coating. Freyer & Mögel, Dresden.
856,217 (September 11, 1923). Rubber sole or heel. Otto Bothe, Südenstrasse 56, Berlin-Steglitz, and Otto Löscher, Küstrinerstrasse 14, Charlottenburg.
856,351 (July 4, 1923). Rubber heel attachment. Johann Modla and Josef Hesselbein, Neustadt a. Wied.
856,475 (June 23, 1923). Exchangeable rubber heel. Peter Link, Vorsterstrasse 23, Köln-Kalk.
856,581 (May 19, 1921). Reinforcing insert for pneumatic covers. Rafael Müller, Klosterstrasse 70, Berlin.
856,606 (July 16, 1923). Sanitary bandage. Rudolf Fischer, Seumesstrasse 7, Leipzig-Schleussig.
885,653 (March 17, 1923). Metal band for solid rubber tire. Continental-Caoutchouc-und Gutta-Percha-Compagnie, Hannover.
856,777 (March 28, 1923). Solid tire. Gummiwerke Fulda, A.-G., Fulda.
856,791 (August 13, 1923). Tire. Hannoversche Gummiwerke "Excelsior," A.-G., Hannover-Limmer.
856,792 (August 13, 1923). Tire. Hannoversche Gummiwerke Excelsior, A.-G., Hannover-Limmer.
856,793 (August 13, 1923). Tire. Hannoversche Gummiwerke Excelsior, A.-G., Hannover-Limmer.
856,814 (September 14, 1923). Solid tire. Gummiwerke Fulda, A.-G., Fulda.
856,822 (June 29, 1921). Injection syringe. Albert Erbe, Dohnaerstrasse 43, Dresden-Strehlen.
856,915 (August 15, 1923). Cap for inner tube valve. Continental-Caoutchouc-und Guttapercha-Compagnie, Hannover.
856,981 (August 27, 1923). Exchangeable rubber heel. Minna Sintermann, née Frese-Eilebrecht, Bergstrasse 6, Bachum.
857,059 (August 15, 1923). Umbrella cover of rubberized fabric. Adolf Bartke, Neuer Graben 19, Königsberg i. Pr.
857,172 (July 13, 1923). Protective tire for automobile pneumatics. Karl Mangelsdorff, Richardstrasse 10, Neukölln.
857,178 (July 23, 1923). Exchangeable rubber heel. Johannes Geist, Windmühlenstrasse 14 b., Dresden.
857,192 (August 2, 1923). Combined rubber heel and rubber edge. Hermann Tromp, Nordendstrasse 24, Frankfurt-am-Main.
857,218 (September 3, 1923). Shoe-sole protector of aluminum with rubber insert. Fritz Metzer, Oberstdorf, Algaü.
857,342 (September 13, 1923). Utensils of hard rubber with covering of soft rubber on top of which steel, iron or other metal protection... Wilhelm Schmidt, Wittenbergerstrasse 35 B., Dresden.

Austria

Patents Issued, With Dates of Publication

A 1238-23 (October 15, 1923). Protection for solid rubber tires. C. Raab, Goess b. Leoben.

Trade Marks

The United States

Two Kinds of Trade Marks Now Being Registered

Under the rules of the United States Patent Office, trade marks registered under the Act of February 20, 1905, are, in general, fanciful and arbitrary marks, while those registered under the Act of March 19, 1920, Section 1 (b), are non-technical, that is, marks consisting of descriptive or geographical matter or mere surnames. To be registered under the latter act, trade marks must have been used for not less than one year. Marks registered under this act are being published for the first time when registered, any opposition taking the form of an application for cancellation.

Granted November 13, 1923, Act of February 20, 1905

175,762 STILETTO, the letters of the word pierced by a stiletto, the hilt of which is formed by the initial S of the word—adhesive tape for electrical purposes. Baker, Hamilton & Pacific Co., San Francisco, California.

175,825 HI N. DRI, the final letter ending in a flourish which underscores the other letters and forms a black background for the white letters of the words: THE "ANTI-PLUIE" MAN—waterproof fabrics. Schwartzwaelder Co., Philadelphia, Pennsylvania.

175,830 Representation of a little dog trying to pull a garter from a little boy's hands—rubber sheeting. A. Stein & Co., Chicago, Illinois.

175,838 WEDGE—tires made of rubber and rubber and fabric. The Miller Rubber Co., Akron, Ohio.

175,839 AIRFLEX—arch supports, foot cushions, heel cushions, foot pads and insoles for boots and shoes. Thompson-Barlow Co., Inc., New York, N. Y.

175,851 Representation of a square of fabric on which a color line is longitudinally disposed and formed of three green warps alternating with two of natural color, a continuous yellow stripe at each side of the central stripe and formed of alternating adjacent warps, and a continuous red stripe adjacent each yellow stripe and formed of alternating adjacent warps—cotton fire hose. William and Charles Beck, Inc., Lawrence, Massachusetts.

175,911 RANGER—tires of rubber, rubber and fabric, and inner tubes, tire casings, shoes, and repair parts for use in connection with same. The Ideal Tire & Rubber Co., Cleveland, Ohio.

175,966 REPUBLIC EAGLE—tire casings. The Republic Rubber Co., Youngstown, Ohio.

175,998 HYCOE, the lower stroke of the Y underscoring the entire word—brake lining. The Manhattan Rubber Manufacturing Co., Passaic, New Jersey.

176,026 THE CLUB—garters, waist belts, and suspenders. Knothe Brothers Co., Inc., New York, N. Y.

176,035 CLICO, within a double-lined oval border—rubber outsoles, insoles, heels, and half soles. Clark Rubber Manufacturing Co., Franklin, Massachusetts.

Granted November 13, 1923, Act of March 19, 1920, Section 1(b)

176,094 Representation of a little child stooping over to make a doll walk and exposing to view the child's rubber bloomers; underneath this the word: "QUICKSLIP"—baby bloomers. Rubberized Sheeting & Specialty Co., Inc., New York, N. Y.

Granted November 20, 1923, Act of February 20, 1905

176,107 "POGO"—jumping stick. The Pogo Co., New York, N. Y.

176,124 FIVE TOE FITTER—footwear of leather, rubber, felt and other fabric construction. Thomas G. Plant Co., Boston, Mass.

176,148 REVERE—rubber heels. United States Rubber Co., New Brunswick, N. J., and New York, N. Y.

176,152 WEDGE, the letters arranged wedge-shaped with the largest at top; on either side, in smaller letters arranged one above the other, the word ARCH—rubber heels. Wedge Heel & Rubber Co., Inc., Fort Wayne, Indiana.

176,175 A shield-shaped background at the center of which is the inscription A-7 and in the annular space provided by the double-ruled border the words: RUBBER SERVICE LABORATORIES. Underneath the whole the words: TRADE MARK—compound produced by the interaction of aldehydes and amines and used in curing rubber articles. The Rubber Service Laboratories Co., Akron, Ohio.

176,205 KORD-U-ROY—rubber footwear and rubber soled canvas shoes. Hood Rubber Co., Watertown, Mass.

176,206 PARIS—arm bands and suspenders. A. Stein & Co., Chicago, Illinois.

176,214 Representation of an athlete running and under this the word: JAX—rubber heels. Holtite Manufacturing Co., Baltimore, Maryland.

176,262 A background as a black picture frame with white ornamentation, against the white center of which is the representation of a lady's slipper—shoes of leather, rubber, fabric, or combination of these materials. Cammeyer, New York, N. Y.

176,274 Representation of a tunnel through natural rock, and above it a foot showing the bone structure; within the annular space provided by the two concentric circles of the border the words: NATURAL BRIDGE ARCH-SAVER—shoes of leather and combination of rubber and leather and leather and fabric. Craddock-Terry Co., Lynchburg, Virginia.

Granted November 20, 1923, Act of March 19, 1920, Section 1 (b)

176,334 LONDON CHARACTER SHOES—shoes of leather, rubber, and fabric, and combinations of same. London Shoe Co., Inc., New York, N. Y.

176,356 MASSACHUSETTS—solid rubber tires. Massachusetts Tire Sales Co., Inc., Boston, Mass.

176,362 ROMA—shoes of leather and rubber. Niagara Shoe Co., Inc., Buffalo, New York.

176,372 "TUBE" BRAND—rubber compounding sulphur. Stauffer Chemical Co. of Texas, Houston, Texas.

176,373 "TIRE" BRAND—rubber compounding sulphur. Stauffer Chemical Co. of Texas, Houston, Texas.

Granted November 27, 1923, Act of February 20, 1905

176,496 Representation of the globe, with feet of men and women shown walking around the circumference of the upper hemisphere, and the words GLOBE TROTTER following the curve of the lower hemisphere—hosiery; boots and shoes of leather, rubber, and fabric combinations; overalls and rompers. Sherman & Lebair, Inc., New York, N. Y.

176,511 HOLZEM—flexible shoulder straps for use on women's garments. Howard T. Applegate, Montclair, N. J.

176,556 Representation of a small dog trying to pull away a garter from the hands of a small boy clad only in undergarments—sanitary aprons and sanitary belts. A. Stein & Co., Chicago, Illinois.

176,644 ARCH GUIDE—heels of rubber or analogous material. The Pietzuch Wonder Arch Guide Heel Co., Cincinnati, Ohio.

Granted December 4, 1923, Act of February 20, 1905

176,835 ARCHON HEEL—rubber heels and arch cushions. Flexo Manufacturing Co., Philadelphia, Pa.

176,854 On a black-bordered square within a shaded, diamond-shaped parallelogram the letters SD in heavy black type—boots and shoes made of leather, rubber, fabric, and combinations of these. Rubberhide Co., Boston, Mass.

Granted December 4, 1923, Act of March 19, 1920, Section 1 (b)

176,897 GOODYEAR—vehicle rims, automobiles and motor trucks, motor-driven balloons, balloon fabric, balloon valves, covers for airplane and balloon fuel tanks, and aerostat accessories. The Goodyear Tire & Rubber Co., Akron, Ohio.

176,921 SEIBERLING—rubber soles and heels. Seiberling Rubber Co., Akron, Ohio.

176,922 "GIRDLETTE"—ladies' hose supporters, corsets, girdles and brassieres. Treo Co., Inc., New York, N. Y.

176,942 Within a black line border two hands grasping and bending a shoe, and underneath this the word ARCH-KURE—boots, shoes, and slippers, made wholly or in part of leather, rubber, canvas or textile material. Arthur Wallace, Boston, Mass.

Granted December 11, 1923, Act of February 20, 1905

176,969 HYKESHU—rubber boots and shoes, rubber overshoes, and rubber soled canvas shoes. Hood Rubber Co., Watertown, Mass.

177,017 A line drawing of a heel with a circular disk tangent to it, and under this the words: NO-RUN-OVER—rubber heels. Bernard R. Barva, Fort Wayne, Indiana.

177,126 BLUE STREAK—rubber belting. The Goodyear Tire & Rubber Co., Akron, Ohio.

The Dominion of Canada

Registered

34,494 Triangle having on each side the letter M so disposed that the ends of the limbs of the letters rest on the apices of the triangle—goods manufactured from India rubber and gutta percha but not including philosophical and scientific instruments, apparatus, and contrivances for surgical or curative purposes, clothing, stationery and sporting articles. The Mitchim Rubber Co., Ltd., Morden Road, Mitchim, Surrey, England.

34,592 Representation of a man holding a shaving brush, with the words "ALBRIGHT RUBBERSET" written over the figure—brushes set in rubber. Rubberset Co., Limited, Toronto, Ontario.

The United Kingdom

Published November 7, 1923

439,498 KODAK—goods of india rubber or gutta percha exclusively in Class 40. Kodak, Limited, Kodak House, Kingsway, London, W. C. 2.

439,645 Representation of a shield and across it the word AQUASHIELD—waterproof and rainproof coats. David Taylor, 20 Cannon street, Manchester.

440,411 MACOTEX—raincoats. Alexander Russell Macgregor, 32 Cathcart street, Greenock.

440,955 TALISMAN—all goods included in Class 49. George MacLellan & Co., Ltd., Glasgow Rubber Works, Shuna street, Maryhill, Glasgow.

441,116 PEDEZI—webbed india rubber boot and shoe laces. Emanuel Henry Levi, 50 and 51 High Holborn, London, W. C. 1.

Published November 14, 1923

B425,842 BEANCO—golf balls, tennis balls, cricket bats, croquet sets, green and lawn bowls. Baxendale & Co., Ltd., 41 Miller street, Manchester.

B427,051 BEANCO—golf sets and footballs. Baxendale & Co., Ltd., 41 Miller street, Manchester.

432,600 SIBROM—goods of India rubber or in which India rubber predominates, in Class 40 exclusively. John Morris & Sons, Ltd., Salford Fire Engine Works, Blackpool street, Cross Lane, Salford, Lancashire.

432,601 SIBROM—fire hose and repairing patches made of canvas impregnated with a composition covered by Class 50. John Morris & Sons, Ltd., Salford Fire Engine Works, Blackpool street, Cross Lane, Salford, Lancashire.

440,079 RELIANCE—tubular hose. Reliance Rubber Co., Ltd., 212-13 Upper Thames street, London, E.C.4.

441,419 Representation of the heads of a pair of oxen, the adjacent horns and blinkers welded together and each head jutting through one of the prongs of the letter W, above which is the word WELDOX, and below the heads the words COLD WELDING REPAIR PROCESS; the whole enclosed in a circular outline—goods exclusively in Class 40, made of India rubber or in which rubber predominates. John Leadbitter-Smith and Rene Delarageas, both of 187 Sutherland avenue, Maida Vale, London, W.9.

Published November 21, 1923

432,404 TRIUMPH—golf balls. Wilfrid Hill, trading as The County Golf Co., Chemico Works, Bradford street, Birmingham.

437,576 SALF—rainproof and waterproof clothing but not including boots and shoes or similar articles. Société Anonyme du Loden Francais, 8 Place des Victoires, Paris, France. For service in the United Kingdom address McKenna & Co., 31-34 Basinghall street, London, E.C.2.

440,316 Representation of a man on a motorcycle riding through and separating the words RAIN GALE—macintoshes, waterproofs, coats, sport jackets, all in Class 38. Edgar Gale, trading as The Rain-Gale Manufacturing Co., "Towerhurst," The Avenue, Collingham, near Leeds, and Royal Exchange Chambers, Boar Lane, Leeds.

440,881 VULCAFOR—chemical substances used in the manufacture of India rubber. British Dyestuffs Corp., Ltd., 70 Spring Gardens, Manchester.

441,574 BERSONA—India rubber heels, soles, tips, and pads for boots and shoes. Berson Kautschuk Gesellschaft mit Beschränkter Haftung, Zeiglerstrasse 6, Vienna VII. Austria. For service in the United Kingdom address G. F. Redfern & Co., 15 South street, Finsbury, London, E.C.2.

Prints

The United States

Registered November 20, 1923

7,014 AJAX BRAND PERFECTION IN MEN'S DRESSING COMBS. For combs. The Vulcanized Rubber Co., Inc., Portland, Maine, and New York, N. Y.

Designs

The United States

Issued* November 20, 1923

63,276 Tire. Term 14 years. J. E. Allen, assignor to Fisk Rubber Co., both of Chicopee Falls, Mass.

63,278 Non-skid tire tread. Term 3½ years. Russell D. Belden, assignor to Madison Tire & Rubber Co., Inc., both of Buffalo, N. Y.

63,279 Tire tread. Term 14 years. F. A. Bollinger, Akron, Ohio.

63,292 Tire. Term 14 years. A. A. Frank, Milwaukee, Wisconsin, assignor to the Fisk Rubber Co., Chicopee Falls, Mass.

63,299 Tire. Term 14 years. L. De Holczer, assignor to E. A. Tinsman, both of Salem, Ohio.

63,300 Tire. Term 14 years. Gustave Hubach, Springfield, Mass., assignor to the Fisk Rubber Co., Chicopee Falls, Mass.

63,303 Tire tread. Term 14 years. John I. Martin, Akron, Ohio.

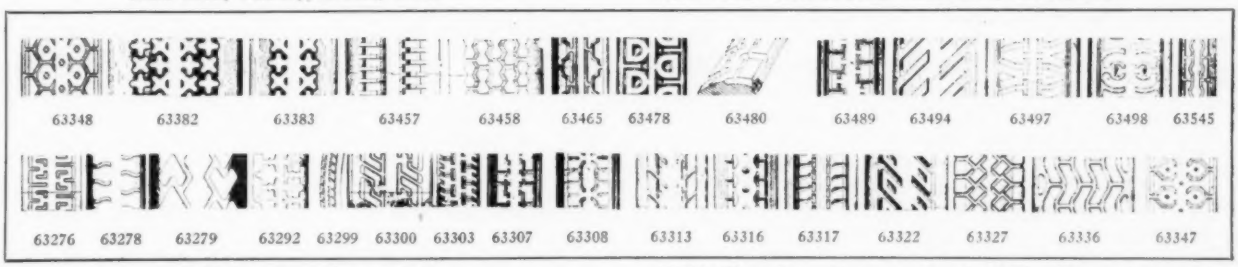
63,307 Tire tread. Harold D. Mitchell, assignor to C. Kenyon Co., Inc., both of Brooklyn, N. Y.

63,308 Tire tread. Term 14 years. Harold D. Mitchell, assignor to C. Kenyon Co., Inc., both of Brooklyn, N. Y.

63,313 Tire tread. Term 14 years. W. H. Paull, Birmingham, England, assignor to the Dunlop Rubber Co., Ltd., London, England.

63,316 Tire. Term 14 years. Carl Pharis, Newark, Ohio, assignor to the Western Auto Supply Co., a corporation of California.

63,317 Tire. Term 14 years. Carl Pharis, Newark, Ohio.



Published November 28, 1923

437,562 AJAX—automobile and bicycle tires of India rubber and fabric, the rubber predominating. Ajax Rubber Co., Inc., New York, N. Y., U. S. A. For service in the United Kingdom address Carpmaels, Ransford & Newton, 24 Southampton Bldgs., Chancery Lane, London, W.C.2.

438,361 Within a U-shaped border a representation of a tower and beneath it the word BABYLON—all goods included in Class 40 but not including belting and straps for driving machinery, or similar articles. Sigmund Rosenthal, Strada Romulus 27, Timisoara III, Roumania. For service in the United Kingdom address Marks & Clerk, 57-58 Lincoln's Inn Fields, London.

440,883 INVINCIBLE—canvas fire hose. George Angus & Co., Ltd., St. John's Works, Grainger street West, Newcastle-on-Tyne, and The Bentham Woven Hose & Belting Works, Station road, Bentham, Lancashire.

441,583 The letters FBH arranged in a monogram, and in the annular space provided by the two concentric circles of the border the words: EFFBEAITCH NON-SLIP SOLES—rubber soles for boots and shoes. Francis Bright-Higgins, 40 Fenchurch street, London, E.C.3.

441,734 FLEUR-DE-LYS—balls for games. Beldam Packing & Rubber Co., Ltd., 29 Gracechurch street, London, E.C.3.

New Zealand

Published October 18, 1923

20,116 On a black circular background the word INDIA in white letters which meet the circumference of the circle at top and bottom; under this the word INDIA in heavy black type—pneumatic tire casings; inner tubes; pneumatic tires of rubber, rubber composition, or of fabric and rubber; tire repair materials and tire repair gum materials in sheet form, all of India rubber or gutta percha and exclusively in Class 40. The India Tire & Rubber Co., Akron, Ohio, U. S. A.

Labels

The United States

Registered November 20, 1923

26,550 LION PUNCTURE PATCH. For repairing rubber articles. S. G. Clendenning, Coshocton, Ohio.

26,592 LIBERTY PATCH. For tire tube patches. United States Distribution Co., Saginaw, Michigan.

26,597 UNCLE WIGGILY TOY BALLOONS. For balloon boxes. Fred A. Wish, Inc., New York, N. Y.

63,322 Tire. Term 14 years. Guy de la Rigaudiere, assignor to the Traveler Rubber Co., Bethlehem, U. S. A.

63,327 Tire. Term 14 years. Charles H. Roper, assignor to Hood Rubber Co., both of Watertown, Mass.

63,336 Tire tread. Term 7 years. B. C. Swinehart, Sandusky, Ohio.

63,347 Tire tread. Term 14 years. Paul Worth, Akron, O., assignor to the India Tire & Rubber Co., Mogadore, both in Ohio.

63,348 Tire tread. Term 14 years. Paul Worth, Akron, assignor to the India Tire & Rubber Co., Mogadore, both in Ohio.

Issued* November 27, 1923

63,382 Tire tread. Term 14 years. R. H. Waters, Cumberland, Maryland, assignor to Kelly-Springfield Tire Co., New York, N. Y.

63,383 Tire tread. Term 14 years. R. H. Waters, Cumberland, Maryland, assignor to Kelly-Springfield Tire Co., New York, N. Y.

Issued* December 4, 1923

63,399 Toy balloon. Term 7 years. J. J. Guinter, Akron, Ohio.

Issued* December 11, 1923

63,457 Tire. Term 14 years. Walter R. Denman, Cleveland, Ohio.

63,458 Tire. Term 14 years. Walter R. Denman, Cleveland, Ohio.

63,465 Tire tread. Term 3½ years. P. H. Heater, Bucyrus, Ohio.

63,478 Tire. Term 14 years. G. L. Mather, Milwaukee, Wisconsin, assignor to the Fisk Rubber Co., Chicopee Falls, Mass.

63,480 Tire. Term 14 years. R. H. Nesmith, assignor to Morgan & Wright, both of Detroit, Michigan.

63,489 Tire tread. Term 3½ years. H. E. Phelps, assignor to C. Kenyon Co., Inc., both of Brooklyn, N. Y.

63,494 Tire. Term 14 years. B. H. Pratt, Milwaukee, assignor to the Badger Rubber Works, Cudahy, both in Wisconsin.

63,497 Tire. Term 3½ years. H. G. Schmidt, assignor to the Norwalk Tire & Rubber Co., both of Norwalk, Connecticut.

63,498 Tire. Term 3½ years. H. G. Schmidt, assignor to the Norwalk Tire & Rubber Co., both of Norwalk, Connecticut.

63,545 Tire tread. Term 7 years. J. J. Wisniowski, Chicopee, Mass.

*Under Rule No. 167 of the United States Patent Office, the issue closes weekly on Thursday, and the patents of that issue bear date as of the fourth Tuesday thereafter.

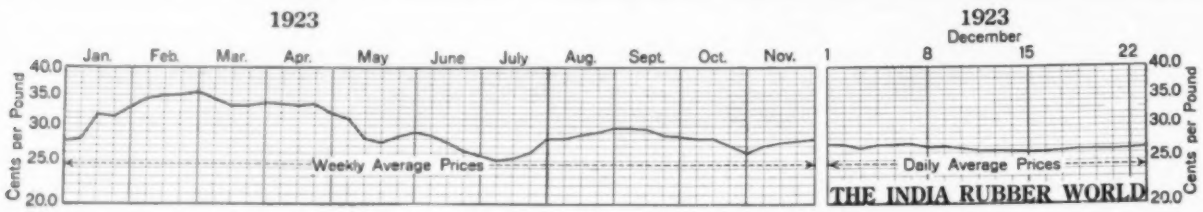
Dominion of Canada

Registered

5,980 Shoe heel. Panther Rubber Co., Ltd., Sherbrooke, Quebec.

5,984 Tire tread. Dunlop Rubber Co., Ltd., Fort Dunlop, Erdington, Birmingham, England.

5,985 Tire. Canadian Consolidated Rubber Co., Ltd., Montreal, Quebec.



Ratio Graph of New York Average Sales Prices of Spot Ribbed Smoked Sheets

Review of the Crude Rubber Market

New York

THE outstanding feature of the crude rubber market for the past month was extreme dullness owing to lack of interest on the part of factory buyers. This attitude is attributed largely to the approach of the year-end inventory period, which always limits buying to actual current needs.

Early in the month lower London cables resulted in easing the demand for spot to fill November contracts. The only factory interest in nearby rubber was for odd lots for immediate delivery. Factory buying for January-March delivery was confidently expected at this time but it did not materialize to any great extent.

Continuing erratic and unsettled, due to the failure of a prominent rubber house in Singapore, the market presented an uncertain aspect to both buyer and seller. A considerable quantity of December rubber was sold at this time, but factories refused to follow up the market and continued buying in small lots for immediate use. The interest in futures was negligible.

During the middle of the month the market was quiet and dull with very little trading. Offers from London and the Far East were priced so high that buying on the part of dealers was almost impossible. At the moment New York was the cheapest market and some minor buying resulted. The factories appeared to be satisfied with price inquiries but no actual trading was in evidence.

The December market closed with very little buying interest of any sort, due to the holidays, and also to the entire absence of factory inquiry. A few small orders were reported, but no real trading. London offers continued to hold firm and few sales were exported to the United States.

During the past month the other grades of rubber were quite neglected. Parás were generally dull but prices remained steady. The same may be said of Balatas, Africans and Centrals.

Imports of all grades during November, 1923, were 13,392 tons, compared with 23,258 tons one year ago. Plantation arrivals for November, 1923, were 12,380 tons, compared with 21,788 tons one year ago. Total importations of all grades for the eleven months ended November 30 were 277,987½ tons, compared with 252,856 tons for the corresponding period of last year.

Spot and future quotations on standard plantation and Brazilian grades were as follows:

PLANTATION. December 1. Spot first latex crêpe, 27⅜-27½ cents; Nov., 27⅜-27½ cents; Dec.-Jan., 27⅜-27½ cents; Jan.-Mar., 27⅝-27¾ cents; Jan.-June, 27¾-27⅞ cents; Apr.-June, 28-28⅛ cents.

December 26. Spot first latex crêpe, 27½ cents; Dec.-Jan., 27½ cents; Jan.-Mar., 27½ cents; Apr.-June, 28 cents.

December 1. Spot ribbed smoked sheets, 27¼-27⅜ cents; Nov., 27¼-27⅜ cents; Dec.-Jan., 27¼-27⅜ cents; Jan.-Mar., 27⅜-27½ cents; Jan.-June, 27⅝-27¾ cents; Apr.-June, 27⅞-28 cents.

December 26. Spot ribbed smoked sheets, 26⅞ cents; Dec.-Jan., 26⅞ cents; Jan.-Mar., 27 cents; Apr.-June, 27¼ cents.

December 1. Spot No. 1 amber crêpe, 25¾-26 cents; Nov., 25¾-26 cents; Dec.-Jan., 25¾-26 cents; Jan.-Mar., 26-26¼ cents; Jan.-June, 26¼-26⅜ cents; Apr.-June, 26½-26⅝ cents.

December 26. Spot No. 1 amber crêpe, 25¼ cents; Dec.-Jan., 25¼ cents; Jan.-Mar., 25½ cents; Apr.-June, 25¾ cents.

December 1. Spot No. 1 rolled brown crêpe, 25⅝-25¾ cents; Nov., 25⅝-25¾ cents; Dec.-Jan., 25⅝-25¾ cents; Jan.-Mar., 25¾-26 cents; Jan.-June, 26-26¼ cents.

December 26. Spot No. 1 rolled brown crêpe, 25 cents; Dec.-Jan., 25⅛ cents; Jan.-Mar., 25¼ cents; Apr.-June 25¾ cents.

SOUTH AMERICAN PARÁS AND CAUCHO, December 1. Spot, upriver, fine, 23-23¼ cents; islands fine, 20-20¼ cents; upriver coarse, 18½-18¾ cents; Cametá, 11-11¼ cents; caucho ball, 20-20¼ cents.

December 26. Spot, upriver fine, 22 cents; islands fine, 20 cents; upriver coarse, 18½ cents; Cametá, 13 cents; caucho ball 19-20 cents.

London

The London market in December exhibited the same dullness as the New York market. American buying was conspicuously absent. Spot prices movement was confined to a narrow range, the maximum and minimum selling prices being 14¼ and 13½ pence.

London advices indicate renewed efforts at negotiations leading to participation of the Dutch planters with the British in the plan of restriction. Dutch restriction would immediately stimulate prices and interest in futures.

Reported London weekly stocks for the past month average about 425 above those for the month previous. The record is as follows: November 27, 59,606 tons; December 4, 60,010 tons; December 11, 60,375 tons; December 18, 59,798 tons.

According to *Financial Times*, 160,359 tons were exported to America from the Far East in 1923, compared with 165,610 tons for 1922. The slight difference is notable as up to and including August, 1923, America alone has imported 225,000 tons, compared with 170,000 tons for the same period in 1922. In 1923 America has imported 55,000 tons more than producing countries have exported to her, which corresponds to the great reduction in London and central market stocks.

New York Quotations

Following are the New York spot quotations per pound, for one year, one month ago, and December 26, the current date:

Plantation Hevea	December, 26, 1922	November 26, 1923	December, 26, 1923
LATEX			
Rubber latex (Hevea)	*per gal.* $1.25	$1.30 @	*per gal.* $1.30@
CREPE	December 26, 1922	November 26, 1923	December 26, 1923
First latex	.27⅛@	.28 @.28¼	.27½@
Off latex	.26½@	.27¾@	.27¼@
Amber No. 1	.26½@	.27 @	.25¼@
Amber No. 2	.26 @	.26½@	.24¾@
Amber No. 3	.25½@	.25½@.26	.24¼@
Brown, clean, thin	.26¼@	.26 @	.24½@
Brown, specky	.25½@	.25¾@	.24 @
Brown, rolled	.25¼@	.26¼@	.25 @

Crude Rubber Market—*Continued*

SHEET	December 26, 1922	November 26, 1923	December 26, 1923
Smoked, ribbed	.27¼ @	.27¾ @.28	.26⅞ @
Smoked, plain	.25 @	†.26½ @	†.25¼ @
Unsmoked	.24½ @	†.25½ @	†.24¼ @
SCRAP			
Colombo scrap No. 1	.22 @	.24 @	†.23 @
Colombo scrap No. 2	.20 @.21	.23 @	†.22 @
East Indian			
PONTIANAK			
Banjermassin	.08½ @	.07 @.08½	.08¾ @
Palembang	@	.07 @	.09¾
Pressed block	.13 @.15	.12½ @.13	.14½ @.14¾
Sarawak	.07¾ @	.06 @.07	†.07 @.07½
South American			
PARAS			
Upriver, fine	.24½ @	.23 @	.22 @
Upriver, fine	*.33 @	*.31¾ @	*.31¾ @
Upriver, medium	.22½ @	.21 @	.19 @
Upriver, coarse	.18½ @	.19 @	.18½ @
Upriver, coarse	@	*.28 @	*.29 @
Islands, fine	.21½ @	.21 @	.20 @
Islands, medium	.19¾ @	†.18 @	†.17 @
Islands, coarse	.14½ @	†.10 @.11	.12 @
Cametá	.14¼ @	†.11 @.11½	.13 @
Acre Bolivian, fine	.25 @.25½	.23½ @.24	.22½ @
Acre Bolivian, fine	*.33 @	*.32 @	*.32 @
Peni Bolivian	.25¼ @	.24 @	†.23 @
Madeira, fine	.26¾ @	.24 @	†.23 @
Peruvian, fine	.24 @	.21 @	†.21 @
Tapajcs, fine	.22½ @.23	.22 @	.20½ @
CAUCHO			
Upper caucho ball	.21½ @	.21 @	.20 @
Upper caucho ball	*.27 @	*.28½ @	*.29¾ @
Lower caucho ball	.20 @	.18½ @	.19 @
Maniçobas			
Ceará negro heads	†.20 @	@	.20 @
Ceará scrap	†.18 @	@	.08 @
Maniçoba 30% guaranty	†.15 @	@	@
Mangabeira, thin sheet	†.20 @	@	.22 @
Centrals			
Central scrap	.16 @	.17 @	@
Central wet sheet	.11 @.12	.16 @	.12 @
Corinto scrap	.18½ @	.17 @	.17½ @
Esmeralda sausage	.18 @	.17 @	.17¾ @
Guayule washed & dried	.27 @	.26 @	.25 @
Africans			
Benguela, No. 1, 28½%	.11 @.12	.17 @	.16 @
Benguela, No. 2, 32½%	.10 @.11	.13 @.15	.12 @.13
Congo prime, black upper	.14 @	.20 @.21	.20 @
Congo prime, red upper	.16 @	.19 @.20	.18 @.19
Kassai, black	.13 @	.20 @.21	.19 @.20
red	.15 @	.19 @.20	.19 @
Gutta Percha			
Gutta Siak	.21 @.22	.16¼ @	.17½ @
Gutta Soh	@	.27 @	.29 @
Red Macassar	3.00 @	3.00 @	2.90 @
Balata			
Block, Ciudad Bolivar	.70 @.73	.70 @	.69 @.70
Colombia	.58 @.60	.55 @.56	.56 @
Panama	.50 @.52	.55 @.56	.56 @
Surinam, sheet	.77 @.80	.75 @	.74 @
amber	.80 @.83	.80 @	.78 @
Chicle			
Colombia	.25 @.30	.25 @	.25 @
Honduras	.62 @	.62 @	.62 @
Venezuela	.63 @	.63 @	.63 @
Yucatan, fine	.65 @	.65 @	.65 @

*Washed and dried crêpe. Shipment from Brazil.
†Nominal.

Comparative Low and High New York Spot Rubber Prices

	December 1923*	December 1922	December 1921
PLANTATIONS			
First latex crêpe	$0.26¾ @ $0.27¼	$0.26¾ @ $0.28	$0.18 @ $0.21
Smoked sheet, ribbed	.26¼ @ .27¾	.26¾ @ .28	.18¼ @ .21
PARAS			
Upriver, fine	.21¾ @ .23½	.23¾ @ .25½	.22¾ @ .24
Upriver, coarse	.18 @ .19	.17 @ .18½	.14 @ .15½
Islands, fine	.19 @ .20¼	.22¼ @ .23½	.21 @ .23
Islands, coarse	.11 @ .11¾	.12¾ @ .17½	.10 @ .11
Cametá	.10¾ @ .12¾	.09¼ @ .12½	.10 @ .12

*Figured to December 22, 1923.

Reclaimed Rubber

Market conditions in reclaims show distinct improvement over those prevailing a month ago. Quotations in a number of important grades have advanced owing to revival of consuming demand in anticipation of early needs of 1924.

Reclaiming plants are operating at close approach to capacity on many grades. The trade outlook for 1924 is encouraging as to volume with prices at present greatly to the advantage of rubber manufacturers.

The successful development of high tensile reclaims has met with generous response by the rubber manufacturing industry which appreciates the economy they offer in replacing crude rubber in making many rubber products. Such reclaims are available in ample volume, admit of standardization as to quality and offer exceptionally good value on volume cost basis.

New York Quotations

December 24, 1923

Auto Tire		
Black	lb.	$0.09 @ $0.09½
Black, washed	lb.	.11 @ .11¼
Dark gray	lb.	.09¾ @ .10½
Light gray	lb.	.11 @ .11½
White	lb.	.15 @ .15¼
Shoe		
Unwashed	lb.	.10 @ .10¼
Washed	lb.	.13 @ .13¼
Tube		
No. 1	lb.	.15½ @ .15½
No. 2	lb.	.12¼ @ .12½
Uncured Tire Friction		
No. 1	lb.	.22½ @ .23½
No. 2	lb.	.17 @ .18
Miscellaneous		
High grade red	lb.	.13¼ @ .13½
High tensile, black	lb.	.16 @ .16¼
Mechanical blends	lb.	.05 @ .10
Truck tire	lb.	.08¼ @ .08½

UNITED STATES IMPORTS OF BALATA DURING THE TWELVE MONTHS ended December 31, 1922, and estimated at 1,819,022 pounds, valued at $978,765, represent a volume somewhat smaller than that of the year preceding, which recorded a total of 1,822,398 pounds. The value for the 1921 period was also greater, the figure being $1,077,859.

New York Average Spot Rubber Prices

PRICES IN CENTS, PER POUND

	November, 1923					December, 1923																	
	26	27	28	29*	30	1	3	4	5	6	7	8	10	11	12	13	14	15	17	18	19	20	21	22
PLANTATIONS																								
Sheet																								
Ribbed smoked	27⅞	27⅜	27⅜	....	27	27½	26¾	26⅝	27⅛	27	26⅝	26⅝	26⅜	26⅜	26⅜	26⅜	26⅛	26	26½	26½	26½	26½	26⅝	26¾
Crêpe																								
First latex	28	27¾	27½	....	27⅜	27½	27⅜	27	27½	27½	26⅞	26⅞	26⅝	26⅝	26½	25½	26½	26½	26⅜	26¾	26⅝	26¾	26⅞	26⅞
Off latex	27¾	27½	27½	....	27	27	27⅛	26½	26⅝	26⅜	26½	26½	26½	26¼	26⅛	26	26	26	26¼	26½	26⅜	26½	26½	26⅜
No. 1 blanket	26⅛	26¼	26½	....	25¾	26	26	25¾	25⅝	25⅝	25½	25¼	25½	25⅛	25	24⅞	24⅞	24⅞	24¾	25¼	24¾	24½	24⅜	24
No. 2 blanket	26	25¾	25⅝	....	25¼	25½	25½	25¼	25¼	25⅛	24⅞	24⅞	24¾	24⅝	24½	24½	24½	24⅜	24½	24⅝	24⅜	24⅛	24⅛	23½
No. 3 blanket	25¾	25½	25½	....	25	25	25⅛	25	24¾	24⅝	24½	24½	24¼	24¼	24½	24	24	24	24¼	24¼	24	23⅝	23¾	24⅛
Thin, clean brown	25¼	25⅝	25⅝	....	25⅛	25⅛	25	24⅞	25	24⅞	24¾	24½	24⅜	24⅛	24⅛	23⅞	23⅞	23¾	23¾	24	24	24	23⅞	24⅛
Specky brown	25¼	25	24¾	....	24½	24⅝	24⅝	24⅜	24½	24⅜	24½	24	24	23⅞	23¾	23½	23⅛	23½	23½	23⅛	23⅛	23⅛	23½	23⅜
Rolled brown	26	25⅝	25¾	....	25⅜	25½	25⅝	25⅜	25¾	25½	25¼	25⅛	24⅝	24¾	24⅝	24¼	24⅜	24⅜	24½	24⅞	24⅝	24⅝	24½	24½

*Holiday.

Plantation Rubber Exports from Dutch East Indies

Java and Madura

	September		Nine Months Ended September	
	1922 Kilos	1923 Kilos	1922 Kilos	1923 Kilos
To—				
Netherlands and Netherlands f. o.	94,000	254,000	2,750,000	2,312,000
England	209,000	615,000	3,668,000	4,109,000
Germany	137,000	68,000	905,000	288,000
France	44,000	25,000	215,000	410,000
Belgium	.....	.....	11,000	.....
Italy	57,000	19,000	165,000	222,000
Canada	.....	.....	.....	54,000
United States	1,648,000	1,178,000	12,938,000	14,996,000
Singapore	51,000	122,000	2,048,000	1,204,000
Japan	21,000	41,000	127,000	299,000
Australia	.....	8,000	93,000	164,000
Total	2,261,000	2,330,000	22,920,000	24,058,000
Ports of Origin:				
Tandjong Priok	1,205,000	1,036,000	9,581,000	9,779,000
Cheribon	.....	13,000	22,000	68,000
Samarang	43,000	109,000	525,000	1,703,000
Soerabaia	928,000	781,000	11,228,000	9,183,000
Tjilatjap	7,000	52,000	616,000	386,000
Banjoewangi	52,000	53,000	399,000	645,000

Belawan-Deli

	September		Nine Months Ended September	
	1922 Kilos	1923 Kilos	1922 Kilos	1923 Kilos
To—				
Netherlands and Netherlands f. o.	162,000	106,600	1,143,000	1,372,000
England	72,000	484,000	1,110,000	2,434,000
Germany	25,000	40,000	449,000	160,000
France	20,000	122,000	81,000	202,000
Belgium	.....	33,000	37,000	204,000
Italy	.....	31,000	22,000	226,000
United States	1,678,000	2,055,000	14,605,000	18,932,000
Penang	3,000	69,000	28,000	420,000
Straits	.....	.....	.....	152,000
Singapore	237,000	94,000	2,304,000	1,955,000
Japan	.....	.....	10,000	.....
Hongkong	.....	.....	.....	9,000
Australia	.....	.....	503,000	1,000
South America	.....	.....	25,000	.....
Total	2,197,000	3,034,000	20,317,000	26,067,000

British Malaya Rubber Exports

An official report from Singapore states that the gross exports of rubber from British Malaya in the month of November, 1923, amounted to 17,543 tons (39,297,100 pounds); the amount of rubber imported was 7,442 tons (16,669,500 pounds); so that net exports amounted to 10,101 tons as compared with 16,474 tons in the corresponding month of 1922.

Appended are the comparative statistics:

	1922		1923	
	Gross Exports Tons	Net Exports Tons	Gross Exports Tons	Net Exports Tons
January	18,962	16,027	22,871	18,513
February	20,033	18,426	19,907	15,818
March	19,304	17,812	23,646	18,538
April	14,400	12,539	24,008	18,619
May	24,780	22,095	20,115	15,095
June	19,617	17,330	18,621	13,664
July	21,964	18,822	16,749	11,125
August	21,316	18,575	19,806	12,764
September	20,238	17,265	21,955	16,686
October	27,466	23,472	21,424	15,083
November	21,642	16,474	17,543	10,101
Totals	229,731	198,837	226,645	166,006

RUBBER IN INDO-CHINA

The area planted to Hevea in Indo-China is increasing. In 1921 this was 33,026 hectares and in 1922 33,291 hectares. This acreage is distributed as follows: Thudaumat, 13,216 hectares; Bienhoa, 8,550 hectares; Giadinh, 5,970 hectares.

The favorable prices obtainable for rubber at present have induced planters to tap all the trees capable of being tapped, with the result that while at the end of 1921 the number of trees exploited was 2,115,965, at the end of 1922 this increased to 4,437,022. The exports of rubber in 1921 amounted to 3,073,737 kilos, of which 2,172,871 kilos went to France. In 1922 the figures were 4,451,825 kilos, of which France took 3,167,071 kilos. During the first half of 1923, shipments totaled 2,532,000 kilos.

The Market for Rubber Scrap

New York

December rubber scrap market conditions showed no appreciable improvement over those of November. Demand for scrap in shoe, tire and tube classifications has been slow and of very moderate volume. Very little new business has developed on the part of reclaimers who, like the rubber goods manufacturers, are holding off on commitments for 1924. Prices on all grades of scrap represent good value at minimum profit to dealers. This reflects a like condition with regard to business in reclaims.

BOOTS AND SHOES. Prices range downward from $3.00 to $2.87½ a hundred with movement steady and moderate.

TIRES. Mixed tires remain unchanged from a month ago and are moving in fair volume only.

INNER TUBES. Very little activity in inner tubes developed during the month. Prices remain depressed. Dealers' prices on No. 1 are around $3.50 delivered and on No. 2 around $2.50 delivered.

Other standard grades of rubber scrap are nominal and without interest.

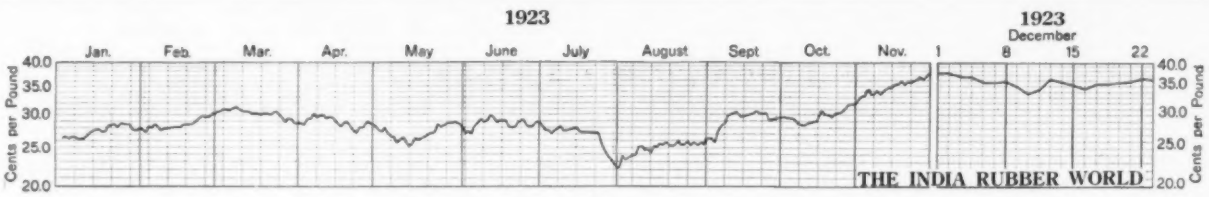
Quotations for Carload Lots Delivered

December 24, 1923

Boots and Shoes			
Boots and shoes, black	lb.	$0.02¾	@$0.03
Trimmed arctics	lb.	.02¼	@ .02¾
Untrimmed arctics	lb.	.01¾	@ .01¼
Hard Rubber			
Battery jars, black compound	lb.	.01	@ .01¼
No. 1 scrap	lb.	.07	@ .08
Inner Tubes			
No. 1	lb.	.04	@ .04¼
No. 2	lb.	.02¾	@ .03
Red	lb.	.02¾	@ .03
Mechanicals			
Black scrap, mixed	lb.	.00¾	@ —
Heels	lb.	.00¾	@ —
Horse-shoe pads	lb.	.01	@ —
Hose, air brake	ton	16.00	@17.00
regular	ton	13.00	@14.00
Red, scrap, mixed	lb.	.01½	@ .02
White, scrap, mixed	lb.	.01½	@ .02
Tires			
PNEUMATIC			
Auto peelings	lb.	.01	@ .01¼
Bicycle	ton	10.00	@12.00
Standard white auto	ton	28.00	@32.00
Mixed auto	ton	13.00	@14.00
Stripped, unguaranteed	ton	10.50	@11.00
SOLID			
Carriage	ton	20.00	@25.00
Irony	ton	10.00	@15.00
Truck, clean	ton	20.00	@25.00

AMERICAN CONSUMPTION OF CRUDE RUBBER

According to statistics published by the Department of Commerce, the number of pounds of crude rubber consumed during the year 1922 in the manufacture of American rubber products amounted to approximately 569,376,000, against 345,600,000 in 1921, or an increase of more than 64 per cent. The production of rubber goods during the first months of 1923 is said to have exceeded all previous records for similar periods. During the year 1920, 373,507,000 pounds were consumed by the rubber industry, and in 1919, 406,231,000 pounds. The reported consumption for the last half of 1922 was 312,617,000 pounds, an increase of 21.7 per cent over the first half of the year and of 46 per cent over the last half of 1921.



Ratio Graph of New York Daily Prices of Spot Middling Upland Cotton

The Market for Cotton and Other Fabrics

New York

AMERICAN COTTON. The market the past month has been very active in view of crop shortage and demand. Spot middlings the first week in December descended rapidly from the high level of 37.35 cents a pound to the relatively low one of 33.75 cents a pound on December 11. In each week succeeding that date there were strong upward movements and reactions which culminated at 36.40 cents a pound December 26.

Official analysis of the cotton supply and demand during the 1923-24 season to September 30 shows cotton "back of the market" at 1,855,549 bales of 500 pounds each. This added to the estimate of about 10,000,000 bales production for the current crop year shows available stocks of about 12,000,000 bales which is barely enough to meet domestic consumption and export needs. The lack of margin thus apparent creates a very grave situation and one certain to send cotton fabric prices upward. Raw cotton tends to go up while cotton goods want to come down. The latter seems unlikely of accomplishment and ultimately consuming demand will force higher values for fabrics.

EGYPTIAN COTTON. Under the influence of sharply advancing price conditions prevailing in the market for American cotton, Egyptian grades have during the month just passed advanced to high levels and spot prices experienced wide fluctuations followed by distinct downward tendency. The first of the month Sakellaridis cotton for prompt shipment went above the 50-cent basis. December 8 Medium Sakellaridis for prompt shipment was quoted at 49⅜ cents, an advance of ⅜ cents from November 28, Medium Uppers at 47⅞ cents, up 3⅛ cents. December 15 these prices had fallen off somewhat, the quotations being medium Sakellaridis 45 cents, and Medium Uppers, 42¾ cents.

On December 27 these grades were reported easier in the local market, the quotations having declined to Medium Sakellaridis, 45 cents, and Medium Uppers 41⅝ cents.

ARIZONA COTTON. Pima cottons are relatively cheaper than Sakels but the demand has all been for the better grades, which are now scarce owing to heavy rains.

SEA ISLAND COTTON. Sea Island cotton is in small supply only, desirable cotton being hard to find.

Cotton Fabrics

DUCKS, DRILLS AND OSNABURGS. The market for these goods is quiet and firm due to the annual pre-inventory lack of orders and the high price of cotton. Demand is improving for 1924 deliveries and higher prices for fabrics will prevail as new requirements of consumers develop.

RAINCOAT FABRICS. Business in raincoat fabrics has been very quiet but slight improvement is now developing, following increase of inquiries from the proofing trade.

SHEETINGS. The demand for sheetings the past month has been relatively light. Previous to the holiday season inquiries for goods increased and some large sales were effected at prices which show no profit on present prices for cotton. There is strong resistance to the advance in cotton goods which must inevitably result from this season's short crop.

TIRE FABRICS. Tire fabric commitments for the 1924 season are reported to be in a state of suspense, although due for early determination. Only a small proportion of the business has been placed, some at high and some at comparatively low quotations.

Quotations now in force are rated as low. Increased buying activity will meet price advances, for quotations now in force are considered very low.

New York Quotations

December 24, 1923

Drills

38-inch 2.00-yard	yard	$0.27 @
40-inch 3.47-yard		.15⅞ @
52-inch 1.90-yard		.29½ @
60-inch 1.52-yard		.36⅞ @

Duck

CARRIAGE CLOTH

38-inch 2.00-yard	yard	.28½ @
40-inch 1.47-yard		.38⅛ @
72-inch 16.66-ounce		.67⅞ @
72-inch 17.21-ounce		.70 @

MECHANICAL

Hose	pound	.55 @
Belting		.54 @

TENNIS

51-inch 1.35-yard	yard	.41½ @

Osnaburgs

40-inch 2.35-yard	yard	.23½ @
40-inch 2.48-yard		.22¼ @
40-inch 3.00-yard		.18¾ @
37½-inch 2.42-yard		.22¼ @

Raincoat Fabrics

COTTON

Bombazine 64 x 60	yard	$0.14½ @
Bombazine 60 x 48		13½ @
Cashmeres 36-inch, tan		.50 @
Plaids 60 x 48		.14 @
Plaids 56 x 44		.13¼ @
Surface prints 60 x 48		.15 @
Surface prints 64 x 60		.16 @

Sheetings, 40-inch

48 x 48, 2.50-yard	yard	.18¼ @
48 x 48, 2.85-yard		.17 @
64 x 68, 3.15-yard		.17 @
56 x 60, 3.60-yard		.14¾ @
48 x 44, 3.75-yard		.14 @

Sheetings, 36-inch

48 x 48, 5.00-yard	yard	.10¼ @
40 x 40, 6.15-yard		.08¼ @

Silks

Canton, 38-inch	yard	$0.37½ @

Tire Fabrics

SQUARE WOVEN 17¼-ounce

Egyptian, carded	pound	$0.72 @.75
Peeler, carded		.65 @.66

CORD 23/5/3

Egyptian, combed	pound	.87 @.90
Egyptian, carded		.78 @.80
Peeler, combed		.80 @
Peeler, carded		.68 @

CORD 13/3/3

Peeler, carded	pound	.64 @.65

LENO BREAKER

8-oz. Peeler, carded	pound	.65 @.67
10-oz. Peeler, carded		.65 @.67

CHAFER

8.25-oz. Peeler, carded	pound	.65 @
9.5-oz. Peeler, carded		.65 @.66
12-oz. Peeler, carded		.64 @.66
14-oz. Peeler, carded		.64 @.65

The Cotton Outlook

INCREASING shortage and high prices characterize the cotton outlook. The rubber industry is again confronted with the unusual situation of cotton higher than rubber, and the strength of the cotton statistical position offers little hope of early relief. The long feared 35-cent cotton has become a reality, and 40-cent cotton is predicted by the South. Certain it is that the crop estimates of the world are disappointing and forecast the necessity of drastically reduced cotton consumption by mills at home and abroad.

How high cotton must go in order to force the necessary curtailment it is impossible to predict. The certainty of another short crop is definitely established and consumption rather than production now becomes the dominant factor in the market. American and European mills have been unable to sell goods at a satisfactory profit for some time, cloth buyers being unwilling to pay advances above current high levels. Mill operations are already considerably curtailed and shut-downs may occur. As soon as the same situation develops in British mills, when the far eastern demand slackens, a raw cotton price will have been reached at which the balance between supply and consumption will have been restored. Textile stocks in many countries are low and more active buying is expected to develop shortly in order to replenish stocks before further price advances occur. American export business, however, is seriously hampered by high prices owing to adverse economic conditions in Europe.

Final Crop Estimates

Total United States production of lint cotton for the 1923-24 season is placed at 10,081,000 500-pound bales in the final estimate of the Department of Agriculture issued on December 12. Of this amount the states of Texas and North Carolina produced more than half. Production of linters will be some 625,022 bales, assuming the average of the past five years which has been 6.2 per cent of the lint cotton. The crop is generally said to be of somewhat lower grade but better staple than last season.

The lint cotton total is 167,000 bales less than the department forecast of November 2, and 2,105,570 bales less than the yearly average of 12,186,570 bales for the past fourteen years, but 319,183 bales more than last year's crop. It is the sixth crop that has been worth over a billion dollars, and at present prices is considered the fourth most valuable crop ever grown.

Average weight per running bale is estimated at 478.3 pounds gross, compared with 501.7 in 1922, 498.5 pounds for 1921, 506.4 pounds in 1920.

The American Cotton Association, from the same sources which last year enabled an estimate within 10,000 bales of the actual yield, places total production at 9,480,000 bales. This is 601,000 bales less than the government estimate; 281,817 bales less than last year's crop and 2,706,570 bales less than the fourteen-year average. The unprecedented deterioration of the crop since September, when it was estimated at 10,500,000 bales, is attributed to adverse seasonal conditions and heavy boll weevil infestation. If the figures of the association are correct the crop is the shortest but one produced in recent years.

The Egyptian Crop

Egyptian cotton, as regards supply and spinners' takings to date, occupies a strong position. Egypt is expected to yield a crop of about 795,000 running bales this season, against 760,000 last year and 707,000 bales two years ago. At the beginning of this season, on September 1, the total stock of Egyptian cotton at all points in the world totaled about 441,000 running bales, against 664,000 last year and 692,000 two years ago. Thus the total supply available for distribution throughout this season will be about 1,236,000 bales, against 1,424,000 bales last year and 1,399,000 two years ago. Spinners' takings for September and October aggregated about 134,000 bales, against 120,000 bales for the same period last year and 131,000 bales two years ago. Stocks at Alexandria are much lower than a year ago, although recent increased American buying is bringing supplies into the market.

Declining Egyptian yield in recent years has caused considerable concern. Ten years ago with a planted area somewhat less than today the total yield was about 7,500,000 cantars. Five years ago the average yield per acre was 5.8 cantars against about 2.8 cantars in 1922.

Deterioration in yield is attributed to more or less complete elimination of the summer fallow period, and a better rotation of crops and deeper drainage are the proposed remedies.

United States Cotton Statistics

Census Bureau statistics show that cotton consumed during November amounted to 531,631 running bales of lint and 48,069 bales of linters, compared with 541,825 of lint and 57,128 of linters in October this year, and 579,190 of lint and 55,128 of linters in November last year.

Cotton on hand November 30 in consuming establishments totaled 1,438,813 bales of lint and 95,851 of linters, compared with 1,102,583 of lint and 87,515 of linters on October 31 this year, and 1,724,488 of lint and 96,244 of linters a year ago. In public storage and at compresses there were 3,770,542 bales of lint and 43,669 of linters, compared with 3,485,839 of lint and 35,810 of linters on October 31 this year, and 4,197,955 of lint and 22,068 of linters a year ago.

Imports during November totaled 16,564 bales, compared with 7,815 in October and 49,551 in November last year.

Exports during November totaled 770,002 bales, including 5,097 bales of linters, compared with 781,722 bales including 3,938 of linters in October this year, and 858,337 including 2,827 of linters in November last year.

Cotton spindles active during November totaled 34,101,452, compared with 34,378,662 in October this year, and 34,658,096 in November last year.

Cotton ginned up to December 1 amounted to 9,243,917 running bales, counting round as half bales and excluding linters, compared with 9,319,601 bales in the same period last year and 7,639,961 bales in 1921. American Egyptian bales included are 15,882, contrasted with 22,708 last year and 22,187 for 1921. Sea Island bales included are 713, compared with 4,907 last year and 2,941 in 1921.

Southwestern Cotton

The boom in cotton has greatly stimulated interest in the southwest cotton region, and as a result of the enhanced prices plans are being made for a considerable extension of the planted area. In 1913 this was but 10,000 acres in all; in 1923 it reached 250,000 acres; and predictions are made by some well versed in the industry that within ten years 1,000,000 acres will be devoted to raising cotton through irrigation.

One cotton merchant estimates the total value of the southwest cotton crop for the current season at $34,000,000, figuring sales on an average of 33 cents a pound. J. W. Boumphrey, of the firm of Boumphrey & Co., cotton merchants, of Manchester, England, having just made a first hand study of southwest conditions, believes that that quarter will soon become one of the major sources of supply for British spinners. One-third of the southwest cotton, he said, has already been taken for England. Japan has also been a very large buyer lately.

Rubber Statistics for Germany

Imports of Crude and Manufactured Rubber

	Six Months Ended June	
UNMANUFACTURED Crude rubber—	1922 Quintals	1923 Quintals
From France	371	41
Great Britain	474	1,115
Netherlands	277	394
British East Africa	1,081	663
British West Africa	868	588
Cameroon	947	.....
Tago	25	5
French West Africa	2,430	1,020
Belgian Congo	3,061	2,056
Portuguese East Africa	178	29
Portuguese West Africa	562	120
British India	33,121	17,212
Malaya	2,983	3,935
Ceylon	31,540	22,420
Netherlands East Indies	44,623	51,929
Bolivia	1,608	654
Brazil	15,138	6,744
Ecuador	419	.....
Peru	146	528
Venezuela	177	58
United States	647	222
Other countries	1,888	2,160
Total	142,564	111,893
Gutta percha	3,640	1,589
Balata	2,255	678
Waste and old rubber	20,014	13,091
Total, unmanufactured	168,473	127,251
MANUFACTURED—		
Rubber solution	13	.....
Cut sheet	10	.....
Rubber thread	121	98
Tires and tubes	1,627	349
Belting, hose and packing	133	99
Elastic goods	172	65
Hard rubber and articles thereof	74	69
Other manufactures of rubber or of rubber and other materials	693	706
Total, manufactured	2,843	1,386
Total imports	171,316	128,637

Exports of Crude and Manufactured Rubber

	Six Months Ended June	
UNMANUFACTURED Crude rubber—	1922 Quintals	1923 Quintals
To Austria	693	1,563
Czecho-Slovakia	278	300
Finland	56	447
Sweden	392	89
United States	.....	822
Other countries	383	1,502
Total	1,802	4,723
Gutta percha	46	74
Balata	72	449
Waste and old rubber	1,657	3,058
Rubber substitute	2,452	1,906
Total, unmanufactured	6,029	10,210
MANUFACTURED		
Rubber solution	1,451	962
Cut sheet	172	366
Rubber thread	344	598
Tires and Tubes:		
Tires	295	892
Covers, also of leather	14,411	22,967
Tubes	4,655	6,962
Belting, hose and packing	10,791	13,640
Footwear	2,060	3,392
Elastic goods	4,821	6,932
Hard rubber and articles thereof	2,867	4,915
Other manufactures of rubber or of rubber and other materials	28,284	33,914
Total, manufactured	70,151	95,540
Total exports	76,180	105,750

THE TOTAL VALUE OF RUBBER PRODUCTS EXPORTED FROM THE United States in 1922 was estimated at $33,450,832, a gain of $3,242,877 over 1921. Tire exports, which were valued at $16,313,414 in 1921 and $20,393,034 in 1922, are responsible for the increase. From 1913 to 1915 the total value of United States exports of rubber goods averaged annually about $12,500,000.

Metal Market Review

New York

Prospects for the year 1924 show many signs of encouragement, according to leading producers of iron and steel, as well as those interested in certain other metals. Steel bookings for December exceeded expectations and approached the November rate, according to the *Iron Age*, while production of steel ingots in 1923 will approximate the record which was made in 1917 with 43,619,200 tons. During December copper prices became firmer, while the rise in the price of aluminum should also be noted.

ALUMINUM. During the early part of December limited quantities of aluminum were received from Europe, and it is said that the imported metal can no longer be considered as competing with the domestic product. A shrewd sales policy on the part of European producers may be responsible for the above-mentioned curtailment.

ANTIMONY. In general the market was quiet with sales in only moderate quantities. About the middle of December prices became temporarily stronger.

COPPER. Following surprisingly good statistics for November, which showed a decrease in surplus of 10,000,000 pounds, and a surplus of no more than 264,000,000 pounds of the refined metal, December copper prices became firmer, with advances predicted.

LEAD. Prices continued to advance steadily during December, the market was strong, and the demand good. The sending of Mexican lead to Europe is said to have been one of the causes for the improved condition. Consumption of lead is now greater than domestic production.

NICKEL. Quotations for shot and ingot nickel are unchanged at 29 cents to 32 cents a pound, with electrolytic nickel held at 32 cents by the leading producers. Both shot and ingot nickel in the outside market are quoted at 29 to 32 cents a pound. United States imports in 1923 of nickel manufactured goods totaled from January to September inclusive about 19,400,000 pounds.

STEEL. The year 1923 has been one of very heavy steel tonnage, production being about 44 per cent ahead of the two best pre-war years, 1912 and 1913, whose output was about 30,000,000 tons each. A new half-year's record has also been made in 1923, with about 23,213,243 tons produced during the first six months. Authorities say that an active buying movement in steel is close at hand, according to present indications.

TIN. The price of tin has in less than four months advanced about 7 cents, notwithstanding violent market fluctuations. Imports for 11 months of 1923 have totaled 62,712 tons, while the world's visible supply in October amounted to 20,567 tons.

ZINC. According to statistics prepared by the American Zinc Institute there was an increase of zinc stocks during November of 5,117 tons, while production during that month amounted to 44,280 tons, as compared with 42,098 tons in October. The market is dull and depressed, with prices at a 6.25-cent basis. The surplus of zinc stocks remains low, however, in spite of the November increase.

BASIC METALS

DECEMBER 21, 1923

	Cents per pound
Aluminum virgin, 98@99 per cent.	25.50 @26.00
Antimony, pound	9.00 @ 9.25
Copper-Lake, spot, pound	.13¼@ .13¾
Electrolytic, spot	.13 @ .13¼
Casting, refinery	.12¾@ ...
Lead, spot, New York, pound	7.40 @ 8.12½
Lead, spot, East St. Louis	7.50 @ 7.75
Nickel, ingot, pound	.29 @ .32
Tin, spot, New York	.46½@ ...
Zinc, spot, New York	6.55 @ 6.60
Zinc, spot, East St. Louis	6.20 @ 6.25

STEEL WIRE

BASE PRICE* ON NO. 9 GAGE AND COARSER

	Cents per pound
Bright basic	4.75@5.00
Annealed soft	4.75@5.00
Galvanized annealed	5.40@5.65
Coppered basic	5.40@5.65
Tinned soft Bessemer	6.40@6.65

*Regular extras for lighter gage.

The Market for Chemicals and Compounding Ingredients

New York

DURING the past month prices of rubber compounding ingredients generally have remained steady. The only notable price reductions are those for lithopone and zinc oxide which were published about the middle of December. Trade in general has been along routine and seasonal lines with marked increase of consuming demand confidently expected to follow the opening of the new year.

ANILINE. The demand for aniline has been steady, keeping spot stocks moderate in volume. The business has proved keenly competitive.

ASBESTINE. Asbestine is gaining increase of interest as a reinforcing ingredient for rubber due to recent appreciation of its colloidal quality. This phase may lead to its use in mechanical rubber goods, such other lines as tire treads, heels and soles.

BARYTES. The market for domestic barytes is not greatly disturbed by imported grades, and remains quite steady. Trade is reported above normal for the season.

BENZOL. Stocks are said to be ample without much surplus and passing into consumption in good volume.

BLANC FIXE. The market has become rather quiet and expected revival of trade is due next month.

CARBON BLACK. For some time past the rubber trade has been taking carbon black mostly to meet current needs, deferring contracts for next season's work in view of the large increase in carbon black production. Prices are expected to stabilize near the present levels because cost of production will intervene to restrain price cutting. Active tire production for the 1924 season is expected to increase demand for carbon black soon after the beginning of the new year.

CLAY. Clay seems to be gaining in favor with rubber makers, who find it affords them desirable quality in their products at moderate cost. Prices remain at consistently low levels for the various grades.

LITHARGE. The demand has held a level routine course with no changes in market tone.

LITHOPONE. Production the past year has matched or exceeded the record of 1922. Makers' stocks are reported moderate. The rubber industry has not been in the market heavily for some months but doubtless will show more active interest early in the year, especially in view of the recent price reduction of lithopone to 6⅛ cents a pound.

SOLVENT NAPHTHA. Supplies are moderate and prices firm. The demand reduced in activity as the month advanced. Upward revision of prices is looked for.

SULPHUR. Values remained unchanged during the month, and trade routine was seasonal.

TALC. Domestic and imported grades seem to share the market without serious interference. The domestic, however, meets most of the needs of the rubber trade for standard rubber purposes at moderate cost. The movement of stocks is not active at present.

WHITING. The rubber trade tonnage is large and is met by whiting of domestic production on an increasing scale. Prices are steady and the demand routine, being most active probably in the footwear, proofing and automobile topping divisions of the industry.

ZINC OXIDE. Tire makers are evincing more interest in zinc oxide as the 1924 season approaches, although the price reductions announced about the middle of the month have not as yet greatly stimulated their orders. The reductions are ⅛ cent a pound on lead free grades and ¼ cent a pound on leaded grades.

New York Quotations

December 24, 1923

Accelerators, Inorganic

Lead, carbonate	lb.	$0.09¼	@	
Lead, red	lb.	.10	@	
sublimed blue	lb.	.08¾	@	
sublimed white	lb.	.08¾	@	
Lime, flour	lb.	.02½	@	
R. M. hydrated	ton	25.00	@	
superfine	lb.	.01½	@	.02
Litharge, domestic	lb.	.10½	@	*.10½
imported	lb.	*.17	@	
Magnesia, carbonate, light	lb.	.07¾	@	.09
calcined, light (bbls.)	lb.	.23	@	.24
calcined, ex. light (bbls.)	lb.	.40	@	
calcined, md. light (bbls.)	lb.	.15	@	
calcined, heavy (bbls.)	lb.	.04½	@	.06
Orange mineral A.A.A.	lb.	.13	@	
Rubber lead	lb.	.10	@	

Accelerators, Organic

A-7	lb.	.75	@	.85
A-19	lb.	.85	@	.95
Accelemal	lb.	.32	@	
Accelerene (f. o. b. English port)	lb.	13s.	@	
Aldehyde ammonia powder	lb.	.95	@	
Aniline (f. o. b.) factory	lb.	.16½	@	.18
sulphate	lb.	.33	@	.35
Cryline	lb.	.60	@	
Diphenyl diamino carbazol	lb.	.36	@	
Diphenylguanidine	lb.	1.10	@	1.20
Ethylidene aniline	lb.	.70	@	.75
Excellerex	lb.	.45	@	.50
Formaldehyde aniline	lb.	.47½	@	
H. R.	lb.	1.40	@	1.50
Hexamethylene tetramine	lb.	.85	@	
Lead oleate (bbls.)	lb.	.16	@	
Methylene aniline	lb.	.35	@	.42
No. 999	lb.	.14½	@	
Paraldehyde	lb.	.17	@	.19
Para-nitros-dimethyl aniline	lb.	.35	@	
Paraphenylene diamine	lb.	1.40	@	1.45

*Nominal.

Acids

Acetic 28% (bbls.)	cwt.	3.88	@	
glacial (carboys)	lb.	.16	@	
Cresylic (95% straw color)	gal.	.78	@	
(95 dark)	gal.	.74	@	.80
Sulphuric, 66 degrees	lb.	.02	@	

Alkalies

Caustic soda	cwt.	3.76	@	3.91
flake, 76% (factory)	cwt.	3.60	@	3.85
solid, 76% (factory)	cwt.	3.15	@	

Colors

BLACK

Bone, powdered	lb.	.05½	@	.07½
Carbon black	lb.	.07½	@	.16
pressed	lb.	.08	@	.11
Drop	lb.	.07½	@	.10
Gritless black	lb.	.40	@	
Ivory black	lb.	.15	@	.45
Lampblack	lb.	.12	@	.16
Micromex	lb.	.08	@	.14
Shawinigan	lb.	.16	@	.18

BLUE

Cobalt	lb.	.21	@	.26
Gritless blue	lb.	3.50	@	
Prussian	lb.	.45	@	.50
Ultramarine	lb.	.08	@	.35
T. K.	lb.	.25	@	.30

BROWN

Iron oxide	lb.	.04½	@	.05½
Sienna, Italian	lb.	$0.06½	@	$0.07½
Umber, Turkey	lb.	.05½	@	.06½

GREEN

Chrome, light	lb.	.28	@	.31
medium	lb.	.30	@	.35
dark	lb.	.32	@	.43
commercial	lb.	.12	@	
tile	lb.	.13	@	.15
Gritless green	lb.	3.50	@	
Oxide of chromium	lb.	.36	@	
T. K.	lb.	.40	@	

RED

Antimony, crimson	lb.	.45	@	
crimson T. K.	lb.	.49	@	
crimson, 15/17% free	lb.	.40	@	
crimson, R.M.P. No. 3	lb.	.50	@	
crimson F.	lb.	.35	@	.45
Antimony, golden	lb.	.19	@	.22
golden T. K.	lb.	.23	@	
golden R.M.P. No. 7	lb.	.20	@	
golden, 15/17% free	lb.	.20	@	
golden, No. 1	lb.	.25	@	
golden, No. 2	lb.	.20	@	
Tideco, golden	lb.	.22	@	.52
Crimson	lb.	.22	@	.52
7-A	lb.	.35	@	
Vermilion, 5% F. S.	lb.	.65	@	
Vermilion 15/17% F.S.	lb.	.55	@	
T. K.	lb.	.50	@	.55
Arsenic-sulphide, red	lb.	.14¾	@	
Gritless red (four shades)	lb.	3.50	@	
purple	lb.	2.50	@	
Indian maroon, English	lb.	.11½	@	.12
Iron oxide, domestic	lb.	.08	@	.12
English	lb.	.12	@	.14
Indian	lb.	.12	@	
pure bright	lb.	.12	@	
reduced	lb.	.10	@	
Spanish	lb.	.03	@	.04½
maroon	lb.	.08	@	.12
Venetian	lb.	.02¾	@	.05½
Oximony	lb.	.16	@	
Pará toner	lb.	1.00	@	1.10
Toluidine toner	lb.	2.10	@	2.25
Vermilion, English	lb.	1.20	@	1.35

Colors—*Continued*

WHITE

Albalith	lb.	$0.07	@$0.07½
Aluminum bronze	lb.	.55	@ .60
Lithopone, domestic	lb.	.06½	@ .08
Azo	lb.	.07	@ .07½
Red Seal, imported	lb.	.07	@ .07¼
Titanium oxide T. O. Pigment	lb.	.15	@
Zinc oxide:			
French process, Florence brand			
Green seal	lb.	.11	@ .11¼
Red seal	lb.	.09¾	@ .10¼
U. S. P.	lb.	.16	@ .18
White seal	lb.	.12	@ .12¼
Horse Head brands			
Selected	lb.	.08½	@ .09
Special	lb.	.08½	@ .09
XX red	lb.	.08	@ .08½
Leaded brands			
Lehigh	lb.	.07¼	@ .07¾
Standard	lb.	.07¼	@ .07¾
Sterling	lb.	.07¼	@ .07¾
Superior	lb.	.07¼	@ .07¾
Palmerton process			
Kadox, black	lb.	.09¾	@ .10¼
blue	lb.	.09½	@ .10
red	lb.	.09¼	@ .09¾
Snow white	lb.	.13	@ .16
Azo (factory):			
ZZZ (lead free)	lb.	.08	@ .08½
ZZ (—5% leaded)	lb.	.07¼	@ .07¾
Z (8.10% leaded)	lb.	.07	@ .07¼

YELLOW

Arsenic	lb.	.87	@
Chrome	lb.	.18	@
Gritless yellow	lb.	3.50	@
India rubber	lb.	.75	@
Ochre, domestic	lb.	.02	@ .02¾
imported	lb.	.03	@ .03½

Compounding Ingredients

Aluminum flake (carloads)	ton	29.00	@
filler	ton	23.00	@
hydrate, light	lb.	.18	@ .20
Ammonia carbonate	lb.	.09¼	@ .10½
Asbestine	ton	20.00	@ 25.00
Aluminum silicate	ton	22.50	@25.00
Barium, carbonate, precip.	ton	85.00	@ 90.00
dust	lb.	.05	@ .06
Barytes, imported	ton	60.00	@
pure white C. L.	ton	23.90	@
off color	ton	20.00	@
uniform floated	ton	23.90	@
water ground and floated	ton	26.00	@30.00
Basofor	lb.	.04¼	@
Blanc fixe	lb.	.04	@ .04¼
Carrara filler (factory)	lb.	.01¾	@
Chalk, precip. extra light	lb.	.04¼	@ .05
heavy (f.o.b. factory)	lb.	.03¾	@ .04
China clay, Dixie	ton	22.00	@35.00
Blue ribbon (carloads)	ton	14.00	@
Blue Ridge	ton	12.00	@26.00
L. H. B.	ton	25.00	@
Tideco (factory)	ton	10.00	@
Cotton flock, black	lb.	.12	@
light-colored	lb.	.12	@ .14
white	lb.	.14½	@ .23
Cotton linters clean mill-run	lb.	.07½	@
Fossil flour (powdered)	ton	60.00	@
(bolted)	ton	60.00	@

* Nominal.

Chemical Market—*Continued*

New York Quotations

December 24, 1923

Glue, high grade	lb.	$0.30	@$0.40
medium	lb.	.20	@ .26
low grade	lb.	.15	@ .18
Graphite, flake	lb.	.06½	@ .12
amorphous	lb.		@
Infusorial earth (powd.)	ton	60.00	@
(bolted)	ton	65.00	@
Lime (bolted)	lb.	.02	@
Mica, amber	lb.	.05	@
powdered	lb.	*.15	@
white	lb.	.06	@
Pumice stone, powdered	lb.	.03	@ .05
Rotten st., powd. (bbls.)	lb.	.02½	@ .04½
Slate flour	ton	12.00	@
Soap bark, cut	lb.	.09½	@ .11
Soapstone, powdered, gray	ton	12.00	@20.00
Sodium bicarbonate (bbls.)	lb.	.02¼	@
Starch, powd. corn (bags)	cwt.	3.22	@ 3.32
(bbls.)	cwt.	3.49	@ 3.59
Talc, soapstone	ton	22.50	@
Terra blanche	ton	25.00	@27.00
Whiting, Alba	cwt.		@
chalk, L. H. B.	ton	18.00	@25.00
Whiting, commercial	cwt.	1.00	@
English	ton	20.00	@25.00
gilders (bolted)	cwt.	1.10	@
K. T.	ton		@
Perfection	ton	13.00	@22.00
Quaker	ton	13.00	@22.00
Superfine, L. H. B.	ton	13.50	@22.50
W. T.	ton	20.00	@
York	ton	12.00	@
Wood pulp, XXX	ton	35.00	@
X (f. o. b. factory)	ton	30.00	@

Mineral Rubber

Genasco (factory)	ton	50.00	@52.00
Gilsonite	ton	65.00	@
Hard hydrocarbon	ton	31.00	@50.00
Liquid rubber	lb.	.13	@
Ohmiac Kapak, K-R	ton	50.00	@60.00
K-4	ton	175.00	@
Parra M. R. flux	lb	.06	@ .07
Soft hydrocarbon	ton	30.00	@50.00
320/340 M. P. hydrocarbon	ton	45.00	@50.00
300/310 M. P. hydrocarbon	ton	40.00	@45.00
Pioneer, M. R., solid (fac.)	ton	42.00	@44.00
M. R. granular	ton	52.00	@54.00
Robertson, M. R., solid	ton	35.00	@75.00
M. R. granular (factory)	ton	42.00	@80.00
Rubrax (factory)	ton	60.00	@
Synpro, gran. M. R. (fac.)	ton	55.00	@

Softeners

Avoilas compound	lb.	.14	@
Castor, No. 1, U. S. P.	lb.	.15	@
No. 3, U. S. P.	lb.	.14½	@
Corn	lb.	.13	@
Cotton	lb.	.13	@ .14
Cycline	gal.	.35	@ .38
Glycerine	lb.	.18	@
Linseed, raw	gal.	.92	@
Palm lagos	lb.	.09½	@ .10
oil clarified	lb.	.10	@ .13
Palm, niger	lb.	.09	@
Peanut, crude	lb.	.13	@
refined	lb.	.16	@
Petrolatum, standard	lb.	.06	@ .08
Petrolatum, sticky	lb.	.08	@ .10
Pine, steam distilled	gal.	.63	@ .65
Rapeseed, refined	gal.	.82	@
blown	gal.	1.00	@
Rosin	gal.	$0.46	@$0.52
Synpro	gal.		@
Soya bean	lb.	.12	@
Tar	gal.	.26	@
Woburn	lb.	.04½	@

Resins and Pitches

Tar, pine, retort	bbl.	11.00	@11.75
kiln	bbl.	11.75	@12.00
Pitch, Burgundy	lb.	.05¼	@
coal tar	lb.	.01¼	@
Fluxol hardwood	lb.	.02	@ .04
pine tar	lb.	.03	@
ponto	lb.	.07½	@
Rosin, K (bbl.)	280 lbs.	6.20	@
strained (bbl.)	280 lbs.	6.10	@
Shellac, fine orange	lb.	.75	@ *.90
substitute	gal.	2.00	@

Solvents

Acetone (98.99% drums [6.62 lbs. per gal.])	lb.	.25	@ .25½
Benzol (90% drums [7.21 lbs. per gal.])	gal.	.26	@ .31
pure (drums)	gal.	.42	@
Carbon bisulphide (dms. [10.81 lbs. per gal.])	lb.	.06½	@ .07½
tetrachloride (drums, [13.28 lbs. per gal.])	lb.	.09½	@ .10½
Hartol No. 303			
Tankcars	gal.	.20	@
Drums, carlots	gal.	.23	@
Drums, less carlots	gal.	.26	@
Motor gasoline (steel bbls.)	gal.	.15½	@
Naphtha, V. M. & P.	gal.	.14½	@
solvent (drums extra)	gal.	.27	@
68° grav.	gal.	.16	@
70° grav.	gal.	.17	@
71° grav.	gal.	.18	@
Cymene (factory)	gal.	2.50	@ 3.00
Toluol, pure (7.21 lbs. per gal.)	gal.		@
Turpentine, spirits	gal.	.94	@
wood, steam distilled	gal.	.84	@

Substitutes

Black	lb.	.08	@ .14
Brown	lb.	.10	@ .15
White	lb.	.09	@ .16
Brown factice	lb.	.08	@ .12½
White factice	lb.	.09	@ .14¾
T. K., various	lb.	.14	@ .18

Vulcanizing Ingredients

Black hypo, T. K., S. F.	lb.	.18	@
13% F. S., L. H. B.	lb.	.20	@
Sulphur chloride	lb.	.08	@ .13½
Sulphur, Bergenport brand, 100% pure (bbls.)	cwt.	2.60	@ 2.90
(bags)	cwt.	2.35	@ 2.65
Sulphur, Bklyn bd. (bbls.)	cwt.	2.75	@ 3.30
superfine com. (bgs.)	cwt.	2.00	@ 2.50
(bbls.)	cwt.	2.40	@ 2.90
Rubber makers	lb.	.03¼	@ .03¾

(See also Colors—Antimony)

Waxes

Wax, beeswax, white, com	lb.	.40	@ .45
ceresine, white	lb.	.10	@ .12
carnauba	lb.	.19	@
montan	lb.	.06	@ .06½
ozokerite, black	lb.	.18	@ .24
green	lb.	.27	@ .28
sweet wax	lb.	.12	@

Paraffin

122/124 white crude scale	lb.	.03½	@ .03¾
124/126 white crude scale	lb.	.03½	@
120/122 fully refined	lb.	.03¼	@
125/127 fully refined	lb.	.04¼	@

COAL MINERS VS. RUBBER WORKERS

That soft coal miners have a decided advantage, in the matter of wages, over the workers in rubber factories is the conclusion reached by the National Industrial Conference Board after a careful study of the daily earnings of labor in the rubber business. Miners in the Hocking Valley District of Ohio, where the wages are the basis of all wage scale agreements in the other organized soft coal mining districts, averaged $8.83 daily during 1922, while for the same period the daily wage of the rubber worker averaged $5.12.

In the matter of what economists call "real earnings"—what the money earned will purchase—soft coal miners have another advantage over workers in the business of manufacturing rubber. The purchasing power of the miner of bituminous coal has increased 74 per cent since 1914, while the purchasing power of labor in the rubber industry has increased only 34 per cent.

The immediate effect of this economic situation has been the drawing to the coal industry of many thousands of miners who were not required. These surplus men, whom the coal industry and the public have to support, are variously estimated at between 150,000 and 200,000.

A CHINESE RUBBER FACTORY

The China Industrial Training Works, Kiangwan, outside of Shanghai, was founded by Chinese philanthropists to supply vocational training to Chinese young men. About 450 workers are employed in the various departments, which include a rubber factory—the only one in Shanghai or North and Central China. This factory employs 100 workers and produces chiefly rubber soles and ricksha tires. From 50,000 to 60,000 pairs of soles are exported monthly to Singapore at $6.00 Mexican ($1.00 Mexican=$0.51 United States currency) per dozen pairs. The soles are full length, vulcanized, white and of medium weight, having a slightly raised heel, and sole with nonskid design. Ricksha tires sell at $12.00 Mexican per pair, to compete with imported brands selling at $11.00 to $14.00 Mexican, but the output is limited. Erasers, baggage truck tires, and rubber mats for rickshas are made to order.

Crude Rubber Arrivals at New York as Reported by Importers

Parás and Caucho

	Fine	Medium	Coarse	Caucho	Cametá
NOVEMBER 22. By "Benedict," Pará and Manáos.					
H. A. Astlett & Co.	99,500	4,700	33,300	.....	.....
General Rubber Co.	.....	.....	.....	.....	67,200
F. R. Henderson & Co., Inc.	49,006	377	.....	.....	.....
L. Littlejohn & Co., Inc.	.....	.....	20,160	.....	.....
Poel & Kelly, Inc.	9,851	.....	41,329	.....	32,366
NOVEMBER 28. By "Pecone," Brazil.					
L. Littlejohn & Co., Inc.	31,360	.....	.....	.....	.....
DECEMBER 3. By "Camoens," Pará and Manáos.					
H. A. Astlett & Co.	110,200	1,000	24,400	.....	.....
L. Littlejohn & Co., Inc.	112,000	23,500	26,000	.....	.....
Meyer & Brown, Inc.	.....	.....	.....	22,400	.....
Poel & Kelly, Inc.	151,494	.....	87,546	22,087	10,834
DECEMBER 6. By "Aidan," Pará and Manáos.					
H. A. Astlett & Co.	23,800	1,000	29,600	11,200	.....
Paul Bertuch	1,091	624	.....	.....	.....
General Rubber Co.	111,800	.....	.....	.....	113,700
L. Littlejohn & Co., Inc.	136,640	.....	.....	.....	.....
Poel & Kelly, Inc.	65,895	.....	.....	.....	.....
Fred Stern & Co., Inc.	1,007	.....	2,112	1,056	.....
DECEMBER 10. By "American Legion," Montevideo.					
Paul Bertuch	.....	.....	749	.....	.....
DECEMBER 17. By "Bonheur," Manáos.					
Paul Bertuch	.....	.....	.....	23,269	.....
F. R. Henderson & Co., Inc.	10,640	8,400	1,680	.....	.....
L. Littlejohn & Co., Inc.	57,087	10,231	53,783	95,084	.....
Meyer & Brown, Inc.	¶35,840	.....	.....	.....	.....

¶Fine and medium.

Plantations

	Pounds
NOVEMBER 19. By "Atlas Maru," Far East.	
Meyer and Brown, Inc.	56,000
NOVEMBER 19. By "Merton Hall," Ceylon.	
H. A. Astlett & Co.	22,400
NOVEMBER 19. By "Virginia Dollar," Far East.	
H. A. Astlett & Co.	22,400
Baird Rubber & Trading Co.	115,360
Baird Rubber & Trading Co.	*112,000
General Rubber Co.	96,300
Hood Rubber Co.	*11,130
H. Muehlstein & Co., Inc.	347,200
Poel & Kelly, Inc.	348,915
Chas. T. Wilson Co., Inc.	18,860
Chas. T. Wilson Co., Inc.	*11,200
NOVEMBER 20. By "Veendyk," Far East.	
H. A. Astlett & Co.	17,400
H. A. Astlett & Co.	11,200
General Rubber Co.	410,800
F. R. Henderson & Co., Inc.	24,615
Meyer & Brown, Inc.	85,120
Poel & Kelly, Inc.	291,123
Chas. T. Wilson Co., Inc.	11,200
NOVEMBER 22. By "Benedict," Para and Manáos.	
Paul Bertuch	109,796
NOVEMBER 26. By "City of Dunedin," Far East.	
L. Littlejohn & Co., Inc.	257,600
NOVEMBER 26. By "Clan Maciver," Far East.	
J. T. Johnstone & Co., Inc.	12,100
L. Littlejohn & Co., Inc.	33,600
Fred Stern & Co., Inc.	8,960
Chas. T. Wilson Co., Inc.	8,960
NOVEMBER 26. By "Vennenia," London.	
L. Littlejohn & Co., Inc.	224,000
Poel & Kelly, Inc.	224,472
NOVEMBER 28. By "Beemsterdyk," Rotterdam.	
H. A. Astlett & Co.	*54,400
Meyer & Brown, Inc.	56,000
DECEMBER 1. By "Ansenia," Liverpool.	
L. Littlejohn & Co., Inc.	150,080
DECEMBER 1. By "Rotterdam," Rotterdam.	
L. Littlejohn & Co., Inc.	184,800
Meyer & Brown, Inc.	22,400
H. Muehlstein & Co., Inc.	179,200
Chas. T. Wilson Co., Inc.	10,080
DECEMBER 3. By "Bowes Castle," Far East.	
H. A. Astlett & Co.	44,800
H. A. Astlett & Co.	*22,400
Baird Rubber & Trading Co.	44,800
Baird Rubber & Trading Co.	*22,400
General Rubber Co.	1,249,100
Hood Rubber Co.	4,440
J. T. Johnstone & Co., Inc.	86,526
L. Littlejohn & Co., Inc.	436,800
Meyer & Brown, Inc.	123,800
H. Muehlstein & Co., Inc.	89,600
Poel & Kelly, Inc.	457,470
Fred Stern & Co., Inc.	406,173
Wm. H. Stiles & Co.	56,000
Chas. T. Wilson Co., Inc.	347,200
Chas. T. Wilson Co., Inc.	*20,160
DECEMBER 3. By "Camoens," Manáos.	
Paul Bertuch	65,498
DECEMBER 3. By "Maine," London.	
L. Littlejohn & Co., Inc.	224,000
Meyer & Brown, Inc.	336,000
Poel & Kelly, Inc.	19,405
DECEMBER 3. By "Minnewaska," London.	
H. A. Astlett & Co.	112,000
L. Littlejohn & Co., Inc.	120,960
Meyer & Brown, Inc.	112,000
DECEMBER 3. By "Steel Traveller," Far East.	
H. A. Astlett & Co.	56,000
H. A. Astlett & Co.	*11,200
Baird Rubber & Trading Co., Inc.	22,400
Baird Rubber & Trading Co., Inc.	*22,400
F. R. Henderson & Co., Inc.	372,869
L. Littlejohn & Co., Inc.	87,360
H. Muehlstein & Co., Inc.	89,600
Poel & Kelly, Inc.	92,160
Fred Stern & Co., Inc.	56,017
Wm. H. Stiles & Co.	56,000
Chas. T. Wilson Co., Inc.	56,000
DECEMBER 4. By "Siam City," Hamburg.	
H. Muelstein & Co., Inc.	22,400
DECEMBER 6. By "Aidan," Pará.	
Paul Bertuch	4,232
DECEMBER 6. By "Morrish Prince," Far East.	
H. A. Astlett & Co.	313,600
H. A. Astlett & Co.	*22,400
Baird Rubber & Trading Co., Inc.	33,600
Baird Rubber & Trading Co., Inc.	*100,800
General Rubber Co.	96,300
J. T. Johnstone & Co., Inc.	86,240
L. Littlejohn & Co., Inc.	351,680
Meyer & Brown, Inc.	145,600
H. Muehlstein & Co., Inc.	100,800
Poel & Kelly, Inc.	524,251
Fred Stern & Co., Inc.	87,340
Wm. H. Stiles & Co.	313,600
Chas. T. Wilson Co., Inc.	78,400
F. R. Henderson & Co., Inc.	71,511
DECEMBER 7. By "Perseus," Far East.	
H. A. Astlett & Co.	33,600
H. A. Astlett & Co.	*22,400
Baird Rubber & Trading Co., Inc.	33,600
General Rubber Co.	24,800
F. R. Henderson & Co., Inc.	28,771
J. T. Johnstone & Co., Inc.	110,788
L. Littlejohn & Co., Inc.	1,229,760
Meyer & Brown, Inc.	331,520
H. Muehlstein & Co., Inc.	67,200
Poel & Kelly, Inc.	747,038
Fred Stern & Co., Inc.	170,240
Wm. H. Stiles & Co.	11,200
Chas. T. Wilson Co., Inc.	145,600
DECEMBER 8. By "Woyo Maru," Batavia.	
L. Littlejohn & Co., Inc.	238,560
H. Muehlstein & Co., Inc.	33,600
DECEMBER 9. By "City of Bagdad," Far East.	
H. A. Astlett & Co.	179,200
Baird Rubber & Trading Co., Inc.	112,000
Paul Bertuch	22,400
F. R. Henderson & Co., Inc.	162,443
J. T. Johnstone & Co., Inc.	197,120
L. Littlejohn & Co., Inc.	1,153,600
Meyer & Brown, Inc.	347,200
H. Muehlstein & Co., Inc.	336,000
Fred Stern & Co., Inc.	132,160
Wm. H. Stiles & Co.	156,800
Chas. T. Wilson Co., Inc.	257,600
Chas. T. Wilson Co., Inc.	*56,000
DECEMBER 10. By "American Legion," Montevideo.	
Paul Bertuch	36,596
DECEMBER 10. By "West Calumb," Far East.	
H. A. Astlett & Co.	112,000
Baird Rubber & Trading Co., Inc.	56,000
General Rubber Co.	742,800
F. R. Henderson & Co., Inc.	49,277
L. Littlejohn & Co., Inc.	100,800
Meyer & Brown, Inc.	179,200
H. Muehlstein & Co., Inc.	89,600
Fred Stern & Co., Inc.	62,830
DECEMBER 12. By "Samarinda," Far East.	
H. A. Astlett & Co.	37,800
H. A. Astlett & Co.	*11,200
General Rubber Co.	533,200
F. R. Henderson & Co., Inc.	12,392
J. T. Johnstone & Co., Inc.	86,242
L. Littlejohn & Co., Inc.	741,440
Meyer & Brown, Inc.	95,760
H. Muehlstein & Co., Inc.	24,640
Fred Stern & Co., Inc.	149,877
Chas. T. Wilson Co., Inc.	67,200
Poel & Kelly, Inc.	373,006
DECEMBER 14. By "Karonga," Far East.	
J. T. Johnstone & Co., Inc.	381,920
L. Littlejohn & Co., Inc.	1,835,680
Fred Stern & Co., Inc.	56,000
DECEMBER 14. By Madawaska," Far East.	
L. Littlejohn & Co., Inc.	138,880
Fred Stern & Co., Inc.	33,600
DECEMBER 14. By "Steel Navigator," Far East.	
H. A. Astlett & Co.	44,860
Baird Rubber & Trading Co., Inc.	100,800
General Rubber Co.	67,200
F. R. Henderson & Co., Inc.	157,796
L. Littlejohn & Co., Inc.	548,800
Meyer & Brown, Inc.	67,200

*Arrived at Boston.

Balata

	Pounds
NOVEMBER 22. By "Benedict," Iquitos.	
H. A. Astlett & Co.	21,900
NOVEMBER 22. By "Surinam," French Guiana.	
Middleton & Co., Ltd.	8,582
DECEMBER 6. By "Aidan," Iquitos.	
H. A. Astlett & Co.	24,600
Meyer & Brown, Inc.	3,360

United States Crude and Waste Rubber Imports for 1923 (By Months)

	Plantations	Parás	Africans	Centrals	Guayule	Manicoba and Matto Grosso	Total 1923	Total 1922	Balata	Miscellaneous	Waste
January ..... tons	29,354	1,233	549	61	.....	.....	31,197	21,867	64	257	382
February	21,815	2,004	308	93	.....	.....	24,220	28,973	25	397	684
March	31,673	1,482	742	19	.....	.....	33,916	28,702	124	738	863
April	29,922	1,095	399	30	142	.....	31,588	14,444	40	1,504	507
May	34,609	1,042	333	24	167	9½	36,184½	20,622	55	463	361
June	31,574	1,032	286	42	.....	.....	32,934	15,750	28	771	300
July	17,459	636	146	23	328	17	18,609	25,245	68	436	121
August	18,083	297	88	30	164	12	18,674	21,764	54	1,039	127
September	10,890	542	69	65	15	30	11,611	19,662*	164	165	83
October	18,728*	410	155	106	263	.....	25,662	23,945	99	469	90
November	12,380	725	146	85	52	4	13,392	23,258	48	302	53
Totals, 11 months, 1923..tons	256,487	10,498	3,221	578	1,131	72½	271,987½	.....	769	6,541	3,571
Totals, 11 months, 1922.....	241,099	9,207	2,094	55	281	122	.....	252,858	418	4,196	617

*Corrected figure.

Compiled from statistics supplied by the Rubber Association of America, Inc.

Official India Rubber Statistics for the United States

Imports of Crude and Manufactured Rubber

	August, 1923		Eight Months Ended August, 1923	
	Pounds	Value	Pounds	Value
UNMANUFACTURED—*free*				
Crude rubber				
From France	111,549	$35,445	2,642,531	$730,243
Netherlands	12,204	2,968	4,921,961	1,397,419
Portugal	20,269	2,581	31,017	3,365
United Kingdom	488,013	130,413	60,872,085	19,558,215
Canada	.....	.....	40,844	12,569
Central America	10,650	1,385	61,079	12,697
Mexico	730	132	121,782	24,593
Brazil	893,404	229,041	19,289,674	4,355,535
Peru	.....	.....	1,276,269	260,292
Other South America	53,389	10,179	1,513,983	403,319
British East Indies	33,057,296	8,951,517	346,124,330	92,630,395
Dutch East Indies	8,019,475	2,238,884	80,118,110	20,528,120
Other countries	74,451	10,073	8,662,351	2,028,882
Totals	42,741,430	$11,612,618	525,676,016	$141,945,644
Balata	39,062	23,936	825,738	488,864
Jelutong (Pontianak)	715,512	68,325	8,330,811	698,610
Gutta percha	98,784	17,698	1,421,615	260,558
Rubber scrap	993,848	116,217	13,269,294	996,147
Totals, unmanufactured	44,588,636	$11,838,794	549,523,474	$144,389,823
Chicle *dutiable*	66,246	26,484	5,884,082	2,897,230
MANUFACTURED—*dutiable*				
Rubber belting	68,882	47,702	353,467	268,781
Other manufactures of, and substitutes for rubber	.....	74,983	.....	628,619

Exports of Domestic Merchandise

	August, 1923		Eight Months Ended August, 1923	
	Pounds	Value	Pounds	Value
MANUFACTURED				
India rubber				
Reclaimed	269,531	$28,720	3,464,807	$354,907
Scrap and old	1,052,113	59,548	10,053,525	452,260
Footwear				
Boots *pairs*	52,911	117,105	237,796	587,324
Shoes *pairs*	257,235	200,674	656,019	549,630
Canvas shoes with rubber soles *pairs*	352,059	271,195	3,105,302	2,344,137
Druggists' rubber sundries	50,522	52,534	533,543	520,141
Hard rubber goods				
Battery jars and accessories	5,645	3,111	276,999	92,586
Other electrical supplies	10,012	4,627	271,212	85,181
Other hard rubber goods	32,133	28,793	355,906	286,735
Tires				
Pneumatic casings				
For automobiles	36,227	1,104,323	1,078,853	11,930,124
Others	4,881	18,209	62,373	233,667
Pneumatic tubes				
For automobiles	69,003	124,359	794,322	1,331,864
Others	4,155	3,653	42,806	40,068
Solid tires				
For automobiles and motor trucks	8,758	216,352	64,916	1,565,527
Others	69,840	16,061	622,239	150,038
All other tires	.....	.....	.....	.....
Tire repair materials	78,312	30,836	557,494	233,213
Belting	251,211	167,262	2,255,875	1,261,114
Hose	347,784	139,592	3,054,842	1,189,732
Packing	162,388	77,812	1,001,437	470,357
Soles and heels	178,094	75,556	1,337,732	480,887
Thread	40,002	40,065	663,789	677,375
Other rubber manufactures	451,241	312,765	3,925,492	2,230,413
Totals, manufactured	.....	$3,093,152	.....	$27,067,280

Exports of Foreign Merchandise

	August, 1923		Eight Months Ended August, 1923	
	Pounds	Value	Pounds	Value
UNMANUFACTURED				
India rubber	1,057,549	$281,679	13,836,485	$4,185,980
Balata	31,202	21,900	152,819	80,277
Jelutong (Pontianak)	.....	.....	.....	.....
Totals, unmanufactured	1,088,751	$303,579	13,989,304	$4,266,257
MANUFACTURED				
Gutta percha and india rubber	119,035	$36,423	122,613	$41,414
India rubber substitutes	.....	.....	2,175	435
Totals, manufactured	119,035	$36,423	124,788	$41,849

Details of exports of domestic merchandise by countries during July, 1923, appeared on pages 66-69 of our October, 1923, issue.

Imports of Crude and Manufactured Rubber

	September, 1923		Nine Months Ended September, 1923	
	Pounds	Value	Pounds	Value
UNMANUFACTURED—*free*				
Crude rubber				
From France	.....	.....	2,642,531	$730,243
Netherlands	16,479	$4,353	4,938,440	1,401,772
Portugal	53,760	6,989	84,777	10,354
United Kingdom	603,168	159,756	61,475,253	19,717,971
Canada	.....	.....	40,844	12,569
Central America	1,526	547	62,605	13,244
Mexico	22,400	5,600	144,182	30,193
Brazil	1,279,854	291,742	20,569,528	4,647,277
Peru	114,754	42,822	1,391,023	303,114
Other So. America	525,716	86,573	2,039,693	489,892
British East Indies	17,093,058	4,264,652	363,217,388	96,895,047
Dutch East Indies	5,916,849	1,600,498	86,034,959	22,128,618
Other countries	275,087	45,787	8,937,438	2,074,669
Totals	25,902,645	$6,509,319	551,578,661	$148,454,963
Balata	243,497	108,896	1,069,235	597,760
Jelutong (Pontianak)	210,940	20,456	8,541,751	719,066
Gutta percha	130,480	21,816	1,552,095	282,374
Rubber scrap	861,264	98,558	14,130,558	1,094,705
Totals, unmanufactured	27,348,826	$6,759,045	576,872,300	$151,148,868
Chicle *dutiable*	158,602	86,125	6,042,684	2,983,355
MANUFACTURED—*dutiable*				
Rubber belting	54,726	18,019	408,193	286,800
Other manufactures of, and substitutes for rubber	.....	49,940	.....	678,559

Exports of Domestic Merchandise

	September, 1923		Nine Months Ended September, 1923	
	Pounds	Value	Pounds	Value
MANUFACTURED				
India rubber				
Reclaimed	200,812	$18,847	3,665,619	$373,754
Scrap and old	930,086	39,835	10,983,611	492,095
Footwear				
Boots *pairs*	39,983	85,236	277,779	672,558
Shoes *pairs*	121,046	96,418	777,065	646,048
Canvas shoes with rubber soles *pairs*	218,227	187,522	3,323,529	2,531,659
Druggists' rubber sundries	62,169	57,922	595,712	578,063
Hard rubber goods				
Battery jars and accessories	4,304	1,321	281,303	93,907
Other electrical supplies	10,520	5,689	281,732	90,870
Other hard rubber goods	24,544	30,125	380,450	316,860
Tires				
Pneumatic casings				
For automobiles	86,362	997,895	1,165,239	12,928,868
Others	3,744	14,092	66,117	247,759
Pneumatic tubes				
For automobiles	64,894	112,634	859,216	1,444,498
Others	3,565	2,760	46,347	42,719
Solid tires				
For automobiles and motor trucks	8,368	208,985	72,880	1,774,512
Others	56,786	13,564	679,025	163,602
All other tires	.....	.....	.....	.....
Tire repair materials	76,712	34,008	634,206	267,221
Belting	286,398	172,614	2,541,196	1,433,670
Hose	358,411	143,447	3,413,253	1,333,179
Packing	136,890	63,997	1,138,327	534,354
Soles and heels	136,336	47,559	1,474,068	528,446
Thread	28,735	31,219	692,524	708,594
Other rubber manufactures	442,721	257,520	4,368,213	2,487,933
Totals, manufactured	3,301,613	$2,603,209	37,717,411	$29,691,169

Exports of Foreign Merchandise

	September, 1923		Nine Months Ended September, 1923	
	Pounds	Value	Pounds	Value
UNMANUFACTURED				
India rubber	1,235,201	$365,368	15,071,686	$4,551,348
Balata	7,372	5,100	160,191	85,377
Gutta percha, rubber substitutes and scrap	772	63	2,947	498
Totals, unmanufactured	1,243,345	$370,531	15,234,824	$4,637,223
MANUFACTURED				
Gutta percha and india rubber	11,512	3,530	134,050	44,931
Totals, manufactured	1,254,857	$374,061	15,368,874	$4,682,154

[1]Details of exports of domestic merchandise by countries during September, 1923, appeared on pages 206-209 of our December, 1923, issue.

Custom House Statistics

New York

Imports of Crude and Manufactured Rubber

	July, 1922		July, 1923	
	Pounds	Value	Pounds	Value
UNMANUFACTURED—*free*				
Crude rubber				
From Belgium	179,250	$17,956	57,250	$4,407
France	6,036	1,403	212,073	43,158
Germany	.....	.....	89,069	16,912
Italy	22,020	2,424	.....	.....
Netherlands	923,272	170,934	45,271	14,330
England	1,766,745	264,739	5,085,565	1,612,847
Guatemala	5,000	654	1,209	236
Nicaragua	.....	.....	106	6
Mexico	.....	.....	729	96
Brazil	1,469,643	149,404	1,391,401	455,975
Chile	58,177	8,782	.....	.....
Colombia	25,443	3,216	162,102	40,565
Ecuador	.....	.....	36,585	6,807
Peru	.....	.....	20,419	4,676
Uruguay	4,113	1,040	.....	.....
British India	45,669	7,818	51,753	16,669
Ceylon	5,069,760	767,974	3,758,229	1,026,282
Straits Settlements	36,144,360	5,252,130	20,376,918	5,910,638
Java	3,216,886	485,721	2,998,137	826,641
Dutch East Indies	5,519,476	790,994	7,130,488	2,116,477
Japan	604,800	81,035	.....	.....
Philippine Islands	.....	.....	719,171	216,750
Totals	55,060,649	$8,006,224	42,136,875	$12,313,472
Balata	128,068	72,306	84,039	41,894
Jelutong (Pontianak)	43,721	4,710	1,020,630	90,812
Gutta percha	172,104	37,392	135,146	24,303
Rubber scrap and reclaimed	75,275	2,238	308,218	20,852
Totals, unmanufactured	55,479,817	$8,122,870	43,684,908	$12,491,333
Chicle ..... *dutiable*	184,787	$88,620	139,026	$72,928
MANUFACTURED—*dutiable*				
Rubber belting for machinery	.....	.....	2,791	3,028
Other manufactures of rubber and substitutes	.....	78,518	.....	103,380
Totals, manufactured	.....	$78,518	2,791	$106,408

Exports of Domestic Merchandise

MANUFACTURED				
India rubber				
Reclaimed	9,707	$955	36,234	$3,983
Scrap and old	175,498	8,372	618,401	33,189
Footwear				
Boots ..... *pairs*	21,369	55,946	39,995	65,429
Shoes ..... *pairs*	36,304	26,499	115,503	97,399
Canvas shoes with rubber soles ..... *pairs*	157,259	125,436	203,989	158,982
Druggists' rubber sundries	38,077	44,844	38,939	38,660
Hard rubber goods				
Battery jars and accessories	10,459	2,568	11,067	5,568
Other electrical supplies	6,571	3,911	19,338	5,079
Other hard rubber goods	25,402	21,929	13,300	19,768
Tires				
Pneumatic casings				
For automobiles	90,383	1,084,599	74,972	853,003
Others	4,090	18,084	3,669	11,048
Pneumatic tubes				
For automobiles	73,573	128,601	77,963	132,657
Others	3,274	5,191	2,216	2,114
Solid tires				
For automobiles and motor trucks	2,160	51,935	5,297	129,843
Others	7,582	2,605	33,891	9,083
Tire repair materials	24,887	11,358	47,673	25,599
Belting	183,917	88,851	150,783	97,129
Hose	173,348	58,202	295,125	122,684
Packing	57,327	20,655	73,771	32,900
Soles and heels	104,487	42,375	116,026	41,622
Thread	42,863	53,368	47,225	52,019
Other rubber manufactures	163,553	94,451	215,047	143,598
Totals, manufactured	.....	$1,950,735	.....	$2,081,356

Exports of Foreign Merchandise

UNMANUFACTURED				
Crude rubber	15,068	$2,004	96,516	$21,936
Balata	9,051	4,970	3,002	2,200
Gutta percha	.....	.....	.....	.....
Totals, unmanufactured	24,119	$6,974	99,518	$24,136
MANUFACTURED				
Rubber manufactures	.....	$125	377	$1,330
Rubber substitutes	.....	.....	.....	.....
Totals, manufactured	.....	$125	377	$1,330

Custom House Statistics

New York

Imports of Crude and Manufactured Rubber

	August, 1922		August, 1923	
	Pounds	Value	Pounds	Value
UNMANUFACTURED—*free*				
Crude rubber				
From Belgium	127,059	$13,827	.....	.....
France	.....	.....	111,549	$35,445
Germany	163,520	32,704	33,275	5,051
Netherlands	1,704,428	325,228	12,204	2,968
Portugal	.....	.....	20,269	2,581
England	2,889,288	443,203	483,496	128,830
Guatemala	.....	.....	4,208	421
Nicaragua	.....	.....	4,974	751
Panama	.....	.....	1,468	213
Mexico	23,785	1,427	730	132
Bolivia	.....	.....	5,750	1,150
Brazil	1,939,818	218,225	893,404	229,041
Colombia	6,166	1,345	33,304	6,049
Ecuador	.....	.....	14,335	2,980
Peru	21,815	3,407	.....	.....
British India	99,230	16,890	35,830	12,708
Ceylon	8,725,306	538,741	3,916,563	968,165
Straits Settlements	29,994,791	4,279,720	25,924,064	7,100,649
Java	4,658,274	688,271	5,041,493	1,390,216
Dutch East Indies	992,245	946,294	2,673,697	774,226
Japan	44,800	5,878	35,504	3,887
Totals	$1,440,585	$7,515,160	39,246,117	$10,665,463
Balata	209,173	135,965	39,062	23,936
Jelutong (Pontianak)	595,663	38,444	715,512	68,325
Gutta percha	187,448	26,439	98,784	17,698
Rubber scrap and reclaimed	184,726	6,535	485,365	37,371
Totals, unmanufactured	52,617,595	$7,722,543	40,584,840	$10,812,793
Chicle ..... *dutiable*	365,138	$192,714	3,643	$1,485
MANUFACTURED—*dutiable*				
Rubber belting for machinery	.....	.....	59,407	41,657
Other manufactures of and substitutes for rubber	.....	87,425	.....	58,456
Totals, manufactured	.....	$87,425	59,407	$100,113

Exports of Domestic Merchandise

MANUFACTURED				
India rubber				
Reclaimed	419	$49	41,384	$4,641
Scrap and old	295,132	16,735	560,646	39,260
Footwear				
Boots ..... *pairs*	13,129	30,207	43,156	94,117
Shoes ..... *pairs*	64,000	52,739	187,353	143,762
Canvas shoes with rubber soles ..... *pairs*	213,730	174,534	229,371	188,530
Druggists' rubber sundries	37,919	46,085	37,110	40,515
Hard rubber goods				
Battery jars and accessories	6,279	2,117	2,263	1,351
Other electrical supplies	10,962	4,378	4,554	2,761
Other hard rubber goods	16,846	17,553	17,624	18,460
Tires				
Pneumatic casings				
For automobiles	81,261	1,005,178	62,264	818,325
Others	3,453	15,856	2,886	9,267
Pneumatic tubes				
For automobiles	74,841	133,611	50,217	92,231
Others	2,987	3,506	2,798	2,300
Solid tires				
For automobile and motor trucks	3,836	99,162	6,457	155,237
Others	30,634	7,768	36,956	8,927
Tire repair materials	79,677	26,939	51,448	21,473
Belting	148,624	70,989	165,059	103,476
Hose	188,496	70,855	191,290	77,883
Packing	63,819	32,740	83,315	42,805
Soles and heels	102,022	44,022	122,761	60,864
Thread	55,866	71,466	28,419	29,066
Other rubber manufactures	135,855	88,267	265,297	206,217
Totals, manufactured	.....	$2,014,756	.....	$2,161,467

Exports of Foreign Merchandise

UNMANUFACTURED				
Crude rubber	404	$135	16,712	$10,801
Balata	61,337	29,868	31,202	21,900
Gutta percha	.....	.....	.....	.....
Totals, unmanufactured	61,741	$30,003	47,914	$32,701
MANUFACTURED				
Rubber manufactures	.....	$2,129	459	$526
Rubber substitutes	.....	.....	.....	.....
Totals, manufactured	.....	$2,129	459	$526

Rubber Statistics for the Dominion of Canada

Imports of Crude and Manufactured Rubber

	September, 1923		Six Months Ended September, 1923 April-September	
	Pounds	Value	Pounds	Value
UNMANUFACTURED—*free*				
Rubber, gutta percha, etc.				
From United Kingdom	114,414	$34,128	2,603,274	$832,207
United States	1,093,142	293,177	9,024,731	2,562,662
Belgium	.....	.....	.....	.....
Brazil	.....	.....	.....	.....
British East Indies:				
Ceylon	.....	.....	.....	.....
Straits Settlements	221,829	59,199	2,846,926	862,137
Dutch East Indies	.....	.....	112,224	30,851
France	.....	.....	2,320	620
Other countries	.....	.....	116,052	27,536
Totals	1,429,385	$386,504	14,705,527	$4,316,013
Rubber recovered	59,778	$6,158	1,350,331	$122,269
Rubber, powdered and rubber or gutta percha scrap	6,424	166	2,296,416	84,656
Balata	.....	325	4,209	3,871
Rubber substitutes	76,688	8,466	403,048	50,504
Totals, unmanufactured	1,572,275	$401,619	18,759,531	$4,577,313
PARTLY MANUFACTURED				
Hard rubber sheets and rods	17,307	$9,193	48,813	$25,863
Hard rubber tubes	.....	2,126	.....	11,536
Rubber thread, not covered	6,022	6,474	41,468	47,089
Totals, partly manufactured	23,329	$17,793	90,281	$84,487
MANUFACTURED				
Belting	.....	$7,106	.....	$80,196
Hose	.....	5,531	.....	68,558
Packing	.....	3,239	.....	25,073
Boots and shoes.....*pairs*	9,318	12,626	55,754	96,269
Clothing, including waterproofed	.....	17,274	.....	108,880
Gloves	.....	1,710	.....	8,051
Hot water bottles	.....	6,069	.....	14,267
Tires, solid.....*number*	161	4,338	5,275	55,725
Tires, pneumatic .....*number*	6,188	48,786	59,240	588,836
Inner tubes .....*number*	614	1,550	19,074	34,873
Elastic round or flat	.....	16,175	.....	154,686
Mats and matting	.....	2,569	.....	12,537
Cement	.....	4,944	.....	27,726
Other rubber manufactures	.....	98,842	.....	785,944
Totals, manufactured	.....	$230,759	.....	$1,472,985
Totals, rubber imports	.....	$650,171	.....	$6,723,421

Exports of Domestic and Foreign Rubber Goods

	September, 1923		Six Months Ended September, 1923 April-September	
	Produce of Canada Value	Re-exports of Foreign Goods Value	Produce of Canada Value	Re-exports of Foreign Goods Value
UNMANUFACTURED				
Crude and waste rubber	$2,746	$4,830	$28,217	$33,372
Totals, unmanufactured	$2,746	$4,830	$28,217	$33,372
MANUFACTURED				
Belting	$6,728	.....	$89,514	.....
Canvas shoes with rubber soles	146,897	.....	679,870	.....
Boots and shoes	74,302	.....	300,053	.....
Clothing, including waterproofed	342	.....	9,718	.....
Hose	13,796	.....	58,450	.....
Tires, casings	240,287	.....	2,898,086	.....
Inner tubes	29,284	.....	304,272	.....
Pneumatic	.....	.....	.....	.....
Solid	10,087	.....	55,428	.....
Vehicle	.....	$2,152	.....	$5,305
Other rubber manufactures	24,250	2,995	116,993	22,518
Totals, manufactured	$545,973	$5,147	$4,512,384	$27,823
Totals, rubber exports	$548,719	$9,977	$4,540,601	$61,195

IMPORTS OF DUTCH CRUDE RUBBER INCREASING

The steadily increasing importations into the United States of crude rubber from the Dutch East Indies are indicated by the following figures: In July, 1921, the American importations from this source were estimated at 2,011,670 pounds, valued at $357,665. In July of the year following the amount taken by the United States had increased more than fourfold, to 8,803,660 pounds, with a value of $1,286,419. A still greater advance appears in July, 1923, the figure reaching 10,265,080 pounds, while the value, $2,980,672, is more than double that for the corresponding month of the year previous, and more than eight times that for July, 1921.

United Kingdom Rubber Statistics

Imports

	October, 1923		Ten Months Ended October, 1923	
	Pounds	Value	Pounds	Value
UNMANUFACTURED				
Crude rubber				
From—				
Straits Settlements	11,052,300	£681,596	64,818,300	£3,952,451
Federated Malay States	3,403,500	214,143	30,448,900	1,876,239
British India	456,500	28,177	5,957,800	370,197
Ceylon and dependencies	2,414,000	148,042	19,811,100	1,210,175
Other Dutch Possessions in Indian Seas	393,700	24,744	2,052,000	131,950
Dutch East India (except other Dutch Possessions in Indian Seas)	1,205,300	75,348	10,290,300	622,287
Other countries in East Indies and Pacific not elsewhere specified	74,300	4,665	1,132,000	74,299
Brazil	828,600	44,401	6,245,900	354,436
Peru	.....	.....	139,100	6,239
South and Central America (except Brazil and Peru)	4,000	188	277,900	14,915
West Africa				
French West Africa	24,500	1,186	804,100	39,505
Gold Coast	13,300	587	131,800	6,139
Other parts of West Africa	36,900	1,442	440,100	15,474
East Africa, including Madagascar	12,200	615	404,500	22,245
Other countries	138,500	8,462	1,131,600	64,987
Totals	20,058,000	£1,233,596	144,085,400	£8,761,538
Waste and reclaimed rubber	194,700	2,729	1,761,300	24,771
Cutta percha and balata	1,128,200	162,952	7,732,200	1,061,822
Rubber substitutes	.....	.....	37,900	714
Totals, unmanufactured	21,380,900	£1,399,277	153,616,800	£9,848,845
MANUFACTURED				
Boots and shoes...*doz. pairs*	5,552	£14,318	139,884	£247,914
Tires and tubes				
Pneumatic				
Outer covers	.....	148,080	.....	2,579,382
Inner tubes	.....	16,187	.....	304,472
Solid tires	.....	32,945	.....	217,908
Other rubber manufactures	.....	77,621	.....	828,621
Totals manufactured	.....	£289,151	.....	£4,178,297

Exports

UNMANUFACTURED				
Waste and reclaimed rubber	436,200	£5,920	6,844,500	£78,480
Rubber substitutes	141,900	3,075	1,276,700	27,651
Totals, unmanufactured	578,100	£8,995	8,121,200	£106,131
MANUFACTURED				
Boots and shoes...*doz. pairs*	24,383	£38,452	182,252	£292,183
Tires and tubes				
Pneumatic				
Outer covers	.....	139,330	.....	1,302,285
Inner tubes	.....	22,533	.....	234,897
Solid tires	.....	30,015	.....	258,456
Other rubber manufactures	.....	256,635	.....	2,333,948
Totals, manufactured	.....	£486,965	.....	£4,421,769

Exports—Colonial and Foreign

	October, 1923		Ten Months Ended October, 1923	
	Pounds	Value	Pounds	Value
UNMANUFACTURED				
Crude rubber				
To Russia	843,500	£48,384	4,947,700	£325,672
Sweden, Norway and Denmark	127,200	11,493	1,397,600	88,437
Germany	1,026,600	72,780	11,011,400	687,526
Belgium	531,600	35,662	3,116,400	204,117
France	3,344,300	209,357	28,195,500	1,822,375
Spain	41,400	2,627	389,600	25,146
Italy	1,152,800	73,093	7,960,600	504,106
Austria	.....	.....	400	22
Hungary	.....	.....	45,100	3,421
Other European countries	418,500	29,860	1,601,400	103,932
United States	232,300	16,316	63,620,500	4,361,051
Canada	49,900	3,151	4,017,200	266,069
Other countries	126,300	8,209	853,700	55,482
Totals	7,944,400	£510,932	127,157,100	£8,447,356
Waste and reclaimed rubber	6,300	75	179,500	1,898
Gutta percha and balata	90,300	11,099	819,200	113,504
Rubber substitutes	.....	.....	13,100	353
Totals, unmanufactured	8,041,000	£522,106	128,168,900	£8,563,111
MANUFACTURED				
Boots and shoes..*doz. pairs*	288	£774	4,666	£8,295
Tires and tubes				
Pneumatic				
Outer covers	.....	18,098	.....	132,148
Inner tubes	.....	2,693	.....	19,937
Solid tires	.....	924	.....	11,152
Other rubber manufactures	.....	10,532	.....	43,780
Totals, manufactured	.....	£33,021	.....	£215,312

Exports of India Rubber Manufactures from the

EXPORTED TO	Belting Value	Hose Value	Packing Value	Thread Value	Boots Pairs	Boots Value	Shoes Pairs	Shoes Value	Canvas Shoes with Rubber Soles Pairs	Canvas Shoes with Rubber Soles Value	Soles and Heels Value	Leather Cloth or Artificial Leather Value	Waterproofed Auto Cloth Value
EUROPE													
Austria	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Azores and Madeira Islands	.....	$422	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Belgium	$3,783	1,331	$1,208	.....	36	$72	2,448	$1,433	288	$427	.....	$6,665	$6,838
Czechoslovakia	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	234	.....
Denmark	262	.....	27	.....	616	3,006	6,712	8,830	48	96	.....	4,794	932
Finland	3,827	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
France	1,662	1,092	1,852	$20,279	9	21	1,659	828	.....	.....	$62	58,045	.....
Germany	290	.....	.....	.....	742	1,490	432	413	.....	.....	.....	.....	.....
Greece	.....	1,285	.....	.....	.....	.....	.....	.....	.....	.....	.....	827	.....
Hungary	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Iceland and Faroe Islands	.....	440	.....	.....	132	536	.....	.....	.....	.....	.....	.....	.....
Italy	1,196	.....	.....	5,108	826	3,161	192	258	.....	.....	142	11,555	613
Latvia	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Lithuania	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Malta, Gozo and Cyprus Islands	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Netherlands	.....	3,580	.....	.....	.....	.....	.....	.....	.....	.....	360	90	505
Norway	1,815	1,299	.....	.....	5,086	7,136	24,142	22,770	.....	.....	408	7,684	676
Poland and Danzig	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Portugal	.....	.....	.....	.....	528	598	1,113	908	.....	.....	.....	729	.....
Rumania	.....	.....	.....	.....	10	24	32	26	3,394	5,935	.....	.....	.....
Russia in Europe	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Spain	1,199	435	.....	.....	158	566	.....	.....	.....	.....	537	7,817	.....
Sweden	61	592	208	607	1,444	5,156	.....	.....	18	13	4,384	8,561	286
Switzerland	1,268	.....	.....	.....	.....	.....	22,566	13,547	3,346	5,511	185	1,185	949
Turkey in Europe	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Ukraine	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
England	16,959	5,062	4,075	30,738	16,850	36,680	29,805	19,052	1,272	1,432	844	11,056	8,631
Scotland	527	531	.....	.....	852	1,171	1,967	1,093	.....	.....	.....	7,494	67
Ireland	.....	.....	.....	.....	.....	.....	504	116	132	94	.....	.....	.....
Yugoslavia, Albania, etc.	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
TOTALS, EUROPE	$32,849	$16,069	$7,370	$56,732	27,289	$59,617	91,572	$69,274	8,498	$13,508	$6,922	$126,736	$19,497
NORTH AMERICA													
Canada—Maritime Provinces	.....	$204	$25	.....	1,207	$3,235	2,502	$1,143	287	$354	.....	.....	.....
Quebec and Ontario	$4,939	8,404	7,302	$3,347	204	662	495	1,182	569	1,111	$2,683	$14,213	$2,833
Prairie Provinces	80	576	.....	.....	.....	.....	120	48	.....	.....	.....	90	.....
Brit. Columbia and Yukon	4,385	57	293	.....	840	3,493	95	306	21	29	.....	74	766
British Honduras	.....	118	7	.....	.....	.....	.....	.....	192	268	28	.....	.....
Costa Rica	104	758	103	.....	.....	.....	66	48	.....	.....	413	274	253
Guatemala	581	164	132	.....	3	15	.....	.....	24	44	444	183	.....
Honduras	526	977	164	.....	.....	.....	.....	.....	184	219	644	326	48
Nicaragua	92	691	343	.....	.....	.....	170	120	1,297	1,228	472	.....	65
Panama	324	9,987	485	.....	.....	.....	1,940	2,805	876	1,060	1,860	49	1,008
Salvador	.....	.....	345	.....	.....	.....	144	100	768	652	2,501	198	243
Mexico	19,625	18,345	11,226	.....	67	248	372	333	20,444	19,317	18,732	3,131	1,914
Miquelon and St. Pierre Islands	.....	.....	.....	.....	384	1,405	5	1	.....	.....	.....	.....	.....
Newfoundland and Labrador	360	14	225	.....	3,313	5,506	6,964	5,605	657	479	413	42	.....
Bermuda	.....	513	8	.....	55	156	48	28	801	929	.....	.....	137
Barbados	175	20	.....	.....	.....	.....	.....	.....	807	847	.....	.....	.....
Jamaica	.....	597	134	349	.....	.....	.....	.....	8,063	6,424	1,139	.....	1,447
Trinidad and Tobago	461	380	512	.....	.....	.....	.....	.....	840	561	48	296	693
Other British West Indies	.....	505	174	.....	.....	.....	.....	.....	2,502	2,346	.....	50	.....
Cuba	6,135	12,231	5,767	75	211	1,460	.....	.....	31,962	21,270	2,831	7,495	3,880
Dominican Republic	56	1,703	149	.....	.....	.....	601	498	1,055	1,076	265	252	18
Dutch West Indies	.....	.....	15	.....	.....	.....	.....	.....	9,609	6,831	28	.....	.....
French West Indies	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Haiti	10	235	693	.....	.....	.....	.....	.....	548	512	170	.....	600
Virgin Islands of United States	.....	.....	.....	.....	.....	.....	.....	.....	183	244	91	.....	.....
TOTALS, NORTH AMERICA	$37,833	$56,479	$28,102	$3,771	6,284	$16,180	13,522	$12,217	81,689	$65,801	$32,762	$26,673	$13,905
SOUTH AMERICA													
Argentina	$33,004	$14,710	$235	.....	264	$1,238	66	$124	14,786	$11,604	$856	$7,789	$28,839
Bolivia	4,554	77	.....	.....	187	908	.....	.....	.....	.....	.....	.....	.....
Brazil	21,914	1,508	1,153	.....	.....	.....	.....	.....	.....	.....	.....	2,971	2,162
Chile	9,588	3,326	2,171	.....	342	1,377	300	199	2,780	1,949	.....	5,503	2,072
Colombia	704	773	347	.....	.....	.....	811	686	798	835	4,117	.....	130
Ecuador	.....	43	.....	.....	.....	.....	192	141	.....	.....	454	531	.....
British Guiana	.....	.....	128	.....	.....	.....	.....	.....	21	16	.....	.....	.....
Dutch Guiana	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	48	.....	.....
Paraguay	.....	.....	1,546	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Peru	987	1,676	773	.....	232	924	.....	.....	.....	.....	327	1,677	.....
Uruguay	2,319	127	277	.....	.....	.....	276	233	8,836	7,507	716	.....	2,189
Venezuela	1,912	487	606	.....	.....	.....	.....	.....	.....	.....	2,244	1,528	323
TOTALS, SOUTH AMERICA	$74,982	$22,727	$7,236	.....	1,025	$4,447	1,645	$1,383	27,221	$21,911	$8,762	$19,999	$35,715
ASIA													
Aden	$21	.....	.....	.....	.....	.....	.....	.....	.....	.....	$29	.....	.....
British India	1,122	$2,739	$477	.....	.....	.....	180	$165	6,528	$8,115	.....	$5,928	.....
Ceylon	.....	267	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	$604
Straits Settlements	855	1,866	292	.....	.....	.....	.....	.....	232	146	.....	209	322
China	860	3,738	.....	.....	.....	.....	1,464	1,286	432	497	.....	1,085	1,378
Chosen	.....	.....	75	.....	.....	.....	48	47	.....	.....	.....	.....	.....
Java and Madura	.....	403	570	.....	.....	.....	.....	.....	900	811	.....	1,492	6,050
Other Dutch East Indies	.....	2,018	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
French Indo-China	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Hongkong	.....	504	.....	.....	.....	.....	.....	.....	.....	.....	.....	274	.....
Japan	3,988	.....	4,648	$2,604	1,840	$3,032	11,423	9,625	.....	.....	.....	7,133	151
Kwantung, leased territory	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	323	.....
Palestine and Syria	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	204	.....
Philippine Islands	2,774	6,776	1,748	.....	.....	.....	1,464	1,902	53,976	45,540	$1,054	3,732	1,190
Russia in Asia	.....	.....	.....	.....	400	300	.....	.....	.....	.....	.....	.....	.....
Siam	.....	.....	.....	.....	.....	.....	.....	.....	96	92	.....	.....	.....
TOTALS, ASIA	$9,620	$18,311	$7,810	$2,604	2,240	$3,332	14,579	$13,025	62,164	$55,201	$1,083	$20,380	$9,695

United States by Countries During October, 1923

Waterproofed Clothing Value	Pneumatic Casings: Automobile Number	Pneumatic Casings: Automobile Value	Pneumatic Casings: Others Value	Solid Tires: Automobile and Motor Truck Value	Solid Tires: Others Value	Pneumatic Tubes: Automobile Number	Pneumatic Tubes: Automobile Value	Pneumatic Tubes: Others Value	Tire Repair Materials Value	Druggists' Rubber Sundries Value	Hard Rubber Goods: Battery Jars and Accessories Value	Hard Rubber Goods: Other Electrical Supplies Value	Hard Rubber Goods: Others Value	Other Rubber Manufactures Value
.....	242	$3,584	.....	.....	.....	242	$474	.....	$45	.....	.....	.....	.....	.....
.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
.....	232	3,090	.....	$45	.....	171	201	.....	25	$231	.....	.....	$246	$4,290
.....	11	120	.....	.....	.....	.....	.....	.....	149	.....	.....	.....	.....	.....
.....	495	8,905	.....	1,700	.....	161	429	.....	36	114	$51	.....	.....	3,646
.....	208	2,276	.....	315	.....	237	428	.....	374	.....	.....	.....	.....	750
.....	67	1,776	$27	.....	.....	7	56	$12	6,024	1,698	956	.....	1,894	16,404
$75	517	13,841	.....	.....	.....	198	886	.....	200	.....	.....	.....	.....	.....
.....	1,162	16,171	289	7,991	$1,305	1,697	2,838	12	.....	.....	.....	.....	.....	.....
.....	14	287	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
78	1,055	10,930	926	.....	.....	71	121	354	108	.....	.....	.....	.....	1,913
.....	.....	.....	.....	.....	.....	.....	.....	.....	48	.....	.....	.....	.....	.....
.....	128	1,331	.....	.....	.....	50	69	.....	.....	.....	.....	.....	.....	.....
.....	12	251	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
600	433	5,385	673	286	.....	770	1,160	84	33	187	.....	.....	.....	1,504
.....	840	14,471	39	5,308	.....	1,716	2,752	29	56	.....	.....	.....	.....	793
.....	20	454	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
.....	10	187	.....	.....	.....	.....	.....	.....	.....	75	.....	.....	.....	.....
.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
.....	.....	.....	.....	462	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
.....	6,280	95,162	266	13,505	.....	3,849	6,861	136	1,068	.....	.....	.....	.....	325
.....	811	10,524	.....	906	.....	399	652	.....	35	435	.....	.....	.....	1,033
.....	12	1,261	.....	.....	.....	12	114	.....	.....	.....	.....	.....	.....	1,109
.....	40	382	.....	.....	218	30	46	.....	270	.....	.....	.....	.....	.....
.....	.....	.....	.....	.....	.....	500	450	.....	.....	.....	.....	.....	.....	.....
1,669	5,272	54,492	.....	34,535	.....	1,416	2,817	.....	200	27,572	.....	$804	3,656	77,388
.....	20	850	.....	3,329	.....	.....	.....	.....	.....	394	.....	.....	.....	97
.....	295	2,285	.....	.....	.....	31	53	.....	.....	.....	.....	.....	.....	.....
.....	97	1,224	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
$2,422	18,273	$249,039	$2,220	$68,382	$1,523	11,557	$20,407	$627	$8,671	$30,706	$1,007	$804	$5,796	$109,252
$564	33	$535	.....	$187	.....	60	$103	.....	$10	$71	.....	.....	.....	$1,149
1,278	2,344	29,536	$220	2,923	$117	603	1,559	.....	2,343	13,456	$1,947	$1,830	$9,972	60,377
180	60	797	.....	270	.....	328	399	.....	221	2,437	.....	17	97	5,863
3,572	95	1,643	.....	789	.....	46	95	.....	44	1,138	95	7	5	2,075
.....	20	225	.....	.....	.....	12	8	.....	7	10	.....	.....	.....	68
233	52	617	.....	829	.....	150	254	.....	165	45	.....	.....	.....	146
119	30	809	.....	.....	509	46	107	.....	51	60	.....	.....	.....	1
9	31	713	.....	63	.....	43	114	.....	.....	106	.....	.....	.....	557
.....	16	242	.....	44	.....	62	102	.....	.....	433	.....	.....	26	257
139	997	11,410	536	859	158	768	1,000	$43	33	219	.....	.....	.....	1,780
.....	64	917	.....	149	.....	96	168	.....	.....	58	.....	.....	.....	155
1,253	4,062	48,941	1,109	9,437	2,773	4,774	9,165	613	2,660	2,655	.....	90	1,487	20,316
.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
1,183	20	272	9	40	52	31	67	.....	.....	.....	.....	105	.....	739
294	.....	.....	.....	.....	130	.....	.....	.....	.....	.....	.....	.....	221	66
.....	.....	.....	.....	329	.....	.....	.....	.....	.....	15	.....	.....	.....	74
78	462	6,310	.....	909	.....	634	1,144	.....	232	292	.....	.....	.....	658
.....	38	560	.....	.....	73	24	61	.....	.....	243	.....	.....	.....	534
42	95	930	327	30	128	115	172	.....	.....	24	.....	89	103	271
9,310	3,352	33,604	938	11,780	.....	3,430	4,550	385	792	7,550	.....	35	694	13,117
48	733	6,898	284	3,528	218	620	855	19	62	230	.....	.....	132	405
.....	127	1,164	.....	.....	.....	159	238	6	43	.....	.....	.....	.....	.....
.....	122	1,133	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
95	180	3,274	60	185	77	220	480	33	19	.....	.....	39	.....	446
.....	20	135	.....	.....	.....	34	38	.....	.....	27	.....	.....	.....	8
$18,397	12,973	$150,665	$3,483	$32,351	$4,235	12,255	$20,679	$1,099	$6,682	$29,069	$2,042	$2,212	$12,737	$109,062
$1,184	6,707	$71,189	.....	$2,993	$727	3,351	$6,097	$38	$1,711	$1,809	$1,000	$682	$3,216	$11,289
.....	28	993	.....	.....	.....	48	59	.....	.....	.....	.....	.....	.....	.....
405	160	2,566	$119	445	50	100	173	.....	22	323	.....	.....	.....	2,435
.....	1,407	19,634	209	.....	1,623	310	890	.....	.....	474	.....	.....	.....	1,635
732	532	7,255	.....	450	29	825	1,518	277	170	288	.....	.....	39	2,069
.....	8	119	.....	.....	.....	89	199	.....	.....	290	.....	.....	.....	287
.....	174	1,729	.....	.....	.....	144	199	.....	.....	.....	.....	.....	.....	121
.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	26
.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
393	615	7,136	456	1,665	.....	343	800	.....	241	296	.....	.....	819	987
192	1,092	11,604	.....	294	.....	1,115	1,868	.....	.....	576	.....	.....	.....	1,027
.....	713	9,635	.....	283	243	1,009	1,616	23	185	238	.....	.....	25	1,015
$2,906	11,436	$131,860	$784	$6,130	$2,672	7,334	$13,419	$338	$2,329	$4,294	$1,000	$682	$4,099	$20,891
.....	235	$1,608	.....	.....	.....	35	$54	.....	.....	.....	.....	.....	.....	.....
.....	1,525	15,023	.....	$10,084	$4,127	1,154	1,708	.....	.....	$422	.....	$192	.....	$2,304
.....	582	6,290	.....	4,156	335	676	1,974	.....	.....	73	.....	.....	.....	.....
.....	678	5,513	.....	1,593	.....	171	485	.....	$2	.....	.....	.....	.....	209
$100	597	8,236	.....	250	.....	492	1,202	.....	11	2,318	$156	.....	.....	1,655
.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	190	.....	.....	.....	50
175	797	8,924	$306	6,899	5,702	863	1,391	$151	100	.....	.....	.....	.....	2,021
.....	115	1,660	.....	822	.....	87	169	.....	392	.....	.....	.....	.....	200
.....	45	497	.....	.....	.....	25	39	.....	.....	.....	.....	.....	.....	.....
.....	71	990	.....	.....	.....	49	100	.....	11	261	.....	.....	.....	.....
.....	7,265	78,729	401	11,988	.....	3,582	7,401	64	764	422	.....	888	.....	5,439
.....	10	110	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
.....	704	10,344	.....	552	.....	324	658	.....	120	.....	.....	.....	.....	459
301	5,327	62,875	1,109	4,492	270	5,307	9,233	60	183	2,212	.....	.....	.....	6,980
.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
.....	20	220	.....	.....	.....	.....	.....	10	.....	.....	.....	.....	.....	.....
$576	17,971	$201,019	$1,816	$40,836	$10,434	12,765	$24,414	$285	$1,583	$5,898	$156	$1,080	.....	$19,317

Exports of India Rubber Manufactures from the

EXPORTED TO	Belting Value	Hose Value	Packing Value	Thread Value	Boots Pairs	Boots Value	Shoes Pairs	Shoes Value	Canvas Shoes with Rubber Soles Pairs	Canvas Shoes with Rubber Soles Value	Soles and Heels Value	Leather Cloth or Artificial Leather Value	Waterproofed Auto Cloth Value
OCEANIA													
Australia	$1,768	$5,944	$3,198	.....	564	$1,305	125	$109	5,205	$4,113	.....	$22,778	$16,434
British Oceania	.....	.....	.....	.....	.....	.....	168	213	750	620	.....	.....	.....
French Oceania	.....	.....	120	.....	.....	.....	.....	.....	815	877	$31	.....	.....
New Zealand	853	1,952	572	.....	394	1,830	.....	.....	.....	.....	120	1,104	.....
Other Oceania	.....	.....	.....	.....	.....	.....	.....	.....	240	266	.....	.....	50
TOTALS, OCEANIA	$2,621	$7,896	$3,890	.....	958	$3,135	293	$322	7,010	$5,876	$151	$23,882	$16,484
AFRICA													
Abyssinia	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Belgian Kongo	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
British West Africa	$63	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
British South Africa	27,366	$19,614	$3,160	$108	1,155	$4,084	1,348	$3,578	1,191	$1,102	$343	$4,921	$2,485
British East Africa	.....	302	.....	.....	.....	.....	154	938	96	73	.....	54	.....
Canary Islands	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Egypt	.....	34	.....	.....	.....	.....	.....	.....	.....	.....	.....	96	295
Other French Africa	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Morocco	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Portuguese East Africa	16,023	.....	629	.....	.....	.....	.....	.....	.....	.....	12	55	.....
Other Portuguese Africa	.....	14	313	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Spanish Africa	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
TOTALS, AFRICA	$43,452	$19,964	$4,102	$108	1,155	$4,084	1,502	$4,516	1,287	$1,175	$355	$5,126	$2,780
GRAND TOTALS	$201,357	$141,446	$58,510	$63,215	38,951	$90,795	123,113	$100,737	187,869	$163,472	$50,035	$222,796	$98,076

Netherlands East Indies Rubber Industry

Plantation Rubber

The principal rubber producing tree which is found here on estates is the *Hevea brasiliensis* and, though to far smaller extent, the *Ficus elastica, Castilloa elastica,* and Manihot species, are also cultivated. The Hevea has proved to be hardy, to sustain even drastic tapping, to come out of severe droughts, and to recover after being attacked by many pests. It has also proved the heaviest yielder of rubber, and to be easily propagated. It finally gives rubber of the highest quality and has been extensively planted.

The total reported acreage planted with Hevea amounted to 899,666 acres at the end of 1921 of which 560,460 acres were tapable; the yield of rubber amounted to 136,657,000 pounds. In the preceding year 16,000,000 pounds more were harvested. The decline is due to the restriction in tapping and the shutting down of several estates. The average produce per acre on the East Coast of Sumatra amounted to 474 pounds against 571 pounds in the preceding year; the corresponding figures for the Preanger Regencies were 503 and 562 pounds.

Plantation rubber is generally marketed as: smoked or unsmoked sheet, crêpe, scraps, lump and earthrubber, and is sold in fairly large quantities at the rubber auctions which are regularly held at Batavia and at Medan. During the years 1921 and 1922 shipments of latex were made from the East Coast of Sumatra to the United States. The export from Java was still negligible during 1922, amounting to about 6,000 l., which went to England.

Plantation Rubber Exports

QUANTITY IN 1,000 K.G.	1919	1920	1921	1922
Java and Madura	35,162	31,190	29,279	31,659
Outer districts	54,460	45,560	44,123	71,954
Totals	89,622	76,750	73,402	103,613

Jelutong

All wild rubber in this colony with the exception of the indigenous *Ficus elastica,* belong to the Apocynaceae family, the most important being the Dyeras. These trees are found in large numbers in the forest of Borneo and Sumatra and supply a product which is exported under the name of "Jelutong." The principal places of export are Palembang, Bandjermasin, Pontianak and places situated on the East Coast of Borneo.

The Palembang jelutong contains the highest percentage of pure rubber (15-18 per cent), the Bandjermasin jelutong from 12-14 per cent and the Pontianak quality still less. The product exported from the South Coast of Borneo as a rule contains larger percentage of moisture and various other substances (about 8 per cent) and is similar to the Bandjermasin product.

Jelutong and Gutta Exports

QUANTITY IN 1,000 K.G.	1919	1920	1921
GUTTA JELUTONG			
Outer districts	7,263	5,369	808
GUTTA HANGKANG			
Outer districts	1,454	1,417	773
GUTTA, OTHER			
Outer districts	863	1,473	251

Of less importance than the Dyera species are the rubber-yielding vines, although the latter give a more valuable product. Of these vines large quantities are found in the forests, of which the *Willughbeia firma* as regards quantity and quality ranks as the most important. It produces a rubber which is known by the native name of "Gutta soesoeh."

Gutta Percha

In the Netherlands East Indies the gutta percha tree grows in the Riouw Archipelago, in Bangka, Borneo, Sumatra and New Guinea, besides in a few other islands. The product is principally obtained from the Palaquium species. The bulk is obtained from trees growing wild, and which are felled for the purpose of tapping. To prevent the extinction of the Palaquium species, plantations have been opened since 1885 by the government at Tjipetir (Java), where practically only trees of this species are grown. The Government Gutta Percha Estate, the only one in this country which produces gutta percha, had in 1922 a planted area of 3,290 acres. In 1922 4,045 tons of leaf were produced against 3,466 tons in 1921. The quantity of prepared gutta percha amounted to 100 tons in 1922, against 79 tons in the preceding year. Some private concerns have also experimented with the cultivation of Palaquium, but without success due to slow growth of the trees.

Gutta Percha Exports

QUANTITY IN 1,000 K.G.	1919	1920	1921
FOREST PRODUCT			
Java and Madura	....	....	....
Outer districts	1,183	748	545
Totals	1,183	748	545
PLANTATION PRODUCT			
Java and Madura	97	4	....
Outer districts	132	94	....
Totals	229	98	....

United States by Countries During October, 1923—*Continued*

Waterproofed Clothing Value	Pneumatic Casings: Automobile Number	Pneumatic Casings: Automobile Value	Pneumatic Casings: Others Value	Solid Tires: Automobile and Motor Truck Value	Solid Tires: Others Value	Pneumatic Tubes: Automobile Number	Pneumatic Tubes: Automobile Value	Pneumatic Tubes: Others Value	Tire Repair Materials Value	Druggists' Rubber Sundries Value	Hard Rubber Goods: Battery Jars and Accessories Value	Hard Rubber Goods: Other Electrical Supplies Value	Hard Rubber Goods: Others Value	Other Rubber Manufactures Value
$80	3,310	$42,513	.....	$19,559	.....	2,168	$4,975	.....	$1,303	$1,640	.....	.....	$167	$12,746
.....	82	902	.....	.....	.....	100	158	.....	35	.....	.....	.....	.....	206
113	26	639	$26	75	.....	39	145	$3	.....	.....	.....	.....	.....	.....
.....	1,169	15,155	.....	4,058	.....	1,769	2,481	.....	394	1,032	$120	.....	.....	1,556
.....	12	140	.....	.....	.....	29	43	.....	.....	8	.....	.....	.....	.....
$193	4,599	$59,349	$20	$23,692	.....	4,105	$7,802	$3	$1,732	$2,680	$120	.....	$167	$14,508
.....	.....	.....	.....	.....	$301	.....	.....	.....	.....	.....	.....	.....	.....	.....
.....	12	$101	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
.....	93	2,245	.....	.....	.....	81	$313	.....	.....	.....	.....	.....	.....	$440
$7,025	921	12,479	$152	$5,133	.....	1,819	3,284	$12	$18	$987	.....	.....	$285	6,882
91	739	7,794	218	.....	.....	647	1,148	32	64	.....	.....	.....	.....	70
.....	561	6,943	.....	1,298	.....	215	435	.....	90	.....	.....	.....	.....	.....
.....	228	2,714	.....	.....	1,131	339	461	.....	140	.....	.....	.....	.....	987
.....	4	42	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
.....	.....	.....	.....	.....	.....	.....	.....	.....	46	.....	.....	.....	.....	.....
.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	89
200	3	35	.....	.....	.....	1	2	.....	.....	.....	.....	.....	.....	.....
.....	39	625	.....	942	.....	50	110	.....	.....	.....	.....	.....	.....	.....
$7,316	2,600	$32,978	$370	$7,373	$1,432	2,152	$5,753	$44	$358	$987	.....	.....	$285	$8,468
$31,810	67,852	$824,910	$8,693	$178,764	$20,296	51,168	$92,474	$2,396	$21,355	$73,634	$4,325	$4,778	$23,084	$281,498

Grafted Hevea an American Possibility

By Courtenay De Kalb

Resourceful botanists have wrought so many near-miracles in adapting tropical and semitropical plants, in a modified state, to cooler climes where the plants have flourished amazingly, that surprise is often expressed that so little has been done toward fitting such a prolific producer of rubber as the *Hevea brasiliensis* tree to the soil and climate of the Southern States. It is true that several spasmodic attempts have been made at rubber-growing in that part of the United States, but, except for the extensive and scientifically conducted commercial experiments made with guayule plants in the Southwest, which are very promising, this fertile field of research, with such alluring possibilities, still remains quite unexplored. It is an opportunity that might well be coveted by industrial leaders who lay such stress upon efficiency and who waste nothing that might be turned to commercial advantage.

Rubber Trees in the United States

Rubber trees are growing without present cultivation in the United States. Witness the *Stillingia sebifera* (Michaux), which was brought many years ago from the semitropical climate of China to the Southern States. It belongs to the same family, *Euphorbiaceæ*, as the *Hevea brasiliensis*, and contains a small amount of rubber in its latex. From cultivation it escaped into the woodlands of South Carolina and southeastern Georgia, and there it grows to its native height of 40 feet. Then there is the *Excœcaria lucida* (Swartz), a genus of the family *Euphorbiaceæ*, a native of the tropics growing freely as a true branching tree in Florida to a height of 40 feet, a northern analog of the tree-like development of the same usually shrubby family (*Euphorbiaceæ*) in the tropics so well exemplified by the *Hevea brasiliensis* and the *Manihot glaziovii*, which latter yields Ceará rubber. Familiar evidence that tropical plants may be adapted to other climes is afforded by the castor-oil plant, *Ricinus communis*, so common in northern gardens, which is a euphorbiaceous plant. So also might be mentioned another plant that appears quite adaptable, the breadfruit tree, *Artocarpus communis*, of the fig family *Moraceæ*, order *Urticales*, and to which are related the *Ficus elastica*, once an important source of rubber but now more ornamental than useful, and the common mulberry tree, *Morus*, the twelve species of which are natives of the temperate zone.

A Hevea-Mulberry Possibility

Of peculiar potential significance is the mulberry tree. One of the species, the red mulberry, *Morus rubra*, grows abundantly in nearly all parts of the country, and it is this variety that oddly enough possesses lactiferous glands as perfectly developed as those of the paragon *Hevea b.* While it is true that the latex of the mulberry is not rich in rubber, it is conceivable that the latex might be enriched. Possibly a hybrid might be formed between one of the great Brazilian rubber-producing trees and the northern mulberry that would yield a latex of sufficient rubber content to make cultivation worth while. If that be found impracticable, perhaps such a result would be obtained with *Excœcaria lucida* or the *Stillingia sebifera.*

Hybridization is best effected between members of the same genus, yet it has often been accomplished even between the rhododendron and the azalea, which are quite as distantly related as the Hevea and the Morus, or the Hevea and the Stillingia or the Excœcaria. Cross-fertilization is favored by a division of the sexes in the flowers of the selected plants, and such division is characteristic of both the Hevea and the Morus.

Grafting May Solve Problem

Such breeding might evolve a new type of rubber tree from the Hevea which might yield a gum comparable in quality and quantity with that afforded by the Hevea, and a tree which might easily be cultivated on the vast stretches of waste land in Florida, Louisiana, and near the Gulf of Mexico and the Carolina sounds. But if it be found impossible to get the desired result with hybridization or cross-fertilization, it might finally be obtained by grafting, or by the closely allied process of budding. One advantage of the latter has been to make a tender plant hardy. The delicate peach from Central Asia has been developed into the sturdy, delicious Elberta peach of Canada. A tender Mexican oak grafted on a northern oak has produced a very vigorous tree. Semitropical roses have often been grafted on the common dog rose with like results. It is known, too, that grafting is well suited to plants that grow from cuttings; and the rubber tree when cultivated is largely propagated in that manner.

UNITED STATES EXPORTS OF CANVAS RUBBER SOLED SHOES HAVE risen from a total for the first quarter of 1922 of 495,260 pairs to 1,283,177 pairs for a similar period in 1923.

The Japanese Rubber Import and Export Trade

Probable Effects of the Earthquake—Foreign Rubber Trade Opportunities in Japan

OWING to the fact that the flourishing young rubber industry of Japan was among the heavy sufferers in the earthquake disaster of September 2, the rubber world is surveying with interest the extent of the Japanese rubber import and export trade, and estimating the probable effects of the earthquake upon it, particularly with respect to foreign rubber trade opportunities in Japan and the Far East.

The basis of this estimate and an idea of the rapid growth of the Japanese rubber industry under the protection of high customs duties during and since the war, are indicated by a comparison of the accompanying statistics of rubber goods and crude rubber imports with those of exports of rubber manufactures.

Highlights of the Japanese Rubber Trade

	Imports of Crude Rubber		Imports of Reclaimed and Unvulcanized Rubber	Imports of Scrap Rubber	Imports of Rubber Goods Value	Exports of Rubber Manufactures Value
	Pounds	Value				
1912.....	2,004,010	$1,514,557	.....	.....	$4,263,192	.....
1913.....	2,681,943	1,725,922	$92,675	.....	2,648,727	$330,859
1914.....	2,305,262*	1,073,319*	43,368	.....	1,489,057	740,063
1915.....	3,903,550	1,715,798	26,822	.....	610,584	†2,371,091
1916.....	6,631,382	3,613,005	42,256	$58,771	1,270,494	†3,434,940
1917.....	8,394,385	4,565,113	26,673	137,657	610,276	4,002,596
1918.....	16,360,902	6,474,119	9,656	86,254	887,659	7,411,506
1919.....	24,132,838	8,682,098	29,062	273,053	1,422,966	9,689,922
1920.....	.....	6,711,121	.....	.....	.....	.....

* Decrease due to British embargo.
† Approximate.

As compared with rubber goods imports amounting in 1913 to $2,648,727 and exports of rubber manufactures that year totaling only $330,859, imports of rubber goods in 1919 had decreased to $1,422,966 and exports of rubber manufactures had increased that year to $9,689,922. This represents a fluctuating decrease of nearly one-half in imports of rubber goods and a steady increase of nearly thirty-fold in exports of rubber manufactures in six years. It also indicates that in that short space of time the Japanese rubber industry developed not only to the point of supplying the bulk of its own rubber goods requirements, but of furnishing a large share of the demand of its neighbors in the Far East.

ing years, however, were consumed in Japanese rubber factories. Considerable of it was resold abroad, especially in the United States, where an average of nearly 3,000,000 pounds annually was disposed of during the years 1918, 1919 and 1920.

The rise of the Japanese reclaiming industry in recent years is shown by the increasing importation of scrap rubber and the decreasing importation of reclaimed rubber. In 1916 scrap rubber imports were valued at only $58,771 as compared with $273,053 in 1919, whereas reclaimed rubber imports, valued at $92,675 in 1913, dropped to $9,656 in 1918 and totaled only $29,062 the following year.

A detailed study of Japanese rubber goods imports, which by 1917 had dwindled to one-seventh what they were in 1912, and in 1919 were only one-third of the 1912 value, indicates from another viewpoint the growth of the Japanese rubber industry and draws attention to Japanese successes as well as to certain lines which the Japanese either have not undertaken or in which they have been less successful. It is in these latter lines that trade opportunities are now especially good for the American and European rubber manufacturer.

Before the war the bulk of Japanese rubber goods imports consisted of insulated wire and cables; rubber tires; soft rubber goods; woven belting and hose, named in their order of importance. In 1919 the order had changed to rubber footwear; soft rubber goods; woven belting and hose; insulated wire and cables.

Imports of insulated wire and cables, which in 1912 were valued at $2,797,418, had diminished with the growth of the home industry to $25,455 in 1917, and were only $97,669 in 1919. This small importation compared with an exportation amounting to $4,205,850 that same year indicates a normal demand for certain kinds of insulated wire only. But in the prompt restoration of communications, lighting, and power services following the earthquake considerable insulated wire imports may reasonably be expected. The same may be said of insulating tape, imports having steadily diminished from $76,156 in 1912 to $11,923 in 1918 and advancing only to $17,500 in 1919.

Rubber tire imports which in 1912 amounted to $556,677 decreased steadily to $560 in 1918, owing to their increasing manu-

Japanese Imports of Rubber Goods

	Dental Rubber	Soft Rubber Goods	Rubber Tires	Insulated Wire and Cable	Waterproof Sheeting	Elastic Goods	Insulating Tape	Woven Belting and Hose	Hard Rubber	Rubber Footwear		Other Rubber Goods	Totals
										Boots	Shoes		
1912.....	.....	$537,663	$556,677	$2,797,418	$21,636	$83,544	$76,156	$147,601	.....	$21,478	$21,019	.....	$4,263,192
1913.....	$39,423	251,778	519,498	1,031,260	22,090	49,123	57,470	280,392	$38,652	25,707	17,737	.....	2,648,727
1914.....	39,142	192,359	215,950	685,086	14,933	32,178	21,267	183,625	34,085	9,576	12,488	.....	1,489,057
1915.....	29,003	117,119	40,735	211,064	16,637	26,592	18,524	94,984	10,380	7,270	11,454	.....	610,584
1916.....	49,975	234,586	10,460	658,881	13,212	55,074	14,008	144,891	16,151	21,736	19,307	.....	1,270,494
1917.....	49,477	249,930	2,673	25,455	12,957	50,642	13,160	157,629	.....	$32,613		$27,680	610,276
1918.....	54,097	452,691	560	42,254	6,764	79,798	11,923	198,842	.....	80,993		31,074	887,659
1919.....	85,053	478,846	3,105	197,669	26,759	138,559	17,500	234,425	.....	300,896		63,869	1,422,966
1920.....	70,000	.....	.....	.....	32,500	105,000	.....	.....	.....	302,508		.....	.....
1921.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	610,458		.....	.....

Imports of rubber goods increased steadily up to 1912, when they amounted to $4,263,192. Thereafter, because of the development of the home industry in response to the stimulus of war conditions, rubber goods imports commenced to decrease. By 1917 they had reached the low level of $610,276, and while they have since more than doubled, due chiefly to the increasing use of rubber boots and shoes, the 1919 total was only $1,422,966, or about one-third of the 1912 value.

Another measure of the rapid growth of Japanese rubber manufacturing is found in the imports of crude rubber from 2,681,943 pounds valued at $1,725,922 in 1913 to 24,132,838 pounds valued at $8,682,098 in 1919, or nearly a ten-fold increase. Not all of the greatly increased crude rubber imports of 1918 and succeed-

facture in Japan, and in 1919 were only $3,105, as compared with exports valued at $3,557,018.[1] The dominance of the Kobe-Osaka district in this trade forecasts little change in the situation resulting directly from the earthquake.

Soft rubber goods imports have fluctuated but remain relatively unchanged. Their value was $537,663 in 1912, $117,119 in 1915 and thereafter steadily increased to $478,846 in 1919. Slightly greater imports may temporarily be expected in this field, but increased production in existing Japanese factories will soon supply the demand.

[1] Official Japanese import statistics covering rubber tires appear to be incomplete since 1915 at least, as the figures are less than United States exports to Japan, as noted elsewhere.

Woven belting and hose imports for certain purposes, although they have fluctuated somewhat, are on the increase. Valued at $147,601 in 1912, they dropped to $94,984 in 1915 and thereafter steadily increased to $234,425. Replacements made necessary by the earthquake may increase this business somewhat, but here again increased production of existing Japanese factories will supply most of the demand.

Rubber boots and shoes now comprise the largest single item of Japanese rubber goods imports. The value of these imports has fluctuated considerably. In 1912 it amounted to $42,497, dropped in 1915 to $18,724 and after 1917 advanced rapidly to $610,458 in 1921. This trade promises to increase normally and in response to present conditions.

Elastic goods imports are generally if slowly on the increase. Their value in 1921 was $83,544; and 1915, $26,592, after which they increased to $138,559 in 1919, but dropped to $105,000 in 1920.

Much the same may be said of dental rubber. Imports valued at $39,423 in 1913, dropped in 1915 to $29,003, advanced to $85,053 in 1919 and receded to $70,000 in 1920.

Waterproof sheeting imports are small but increasing.

a steady gain up to $1,948,474 in 1920 and a steady decline during the past two years.

Japanese imports of crude rubber from the United States have never been important, although they have fluctuated considerably as tabulated above. American re-exports of crude to Japan have been negligible since 1913.

Scrap rubber imports from the United States increased steadily until 1920, when they totaled 3,663,980 pounds valued at $179,571. Owing largely to the slump in crude rubber prices this business dropped the following year to 1,144,705 pounds valued at $23,249. On the other hand, reclaimed rubber imports from the United States, which in 1912 amounted to 274,828 pounds valued at $47,589, suffered fluctuating decreases to the low level of 20,250 pounds valued at $3,211 in 1918, and in 1921 were only 24,810 pounds

A detailed study of last year's rubber goods imports from the United States shows them to consist chiefly of boots and shoes, rubber tires, belting, packing and hose, rubber thread, but including many classifications of rubber goods.

Rubber boot and shoe imports in 1922 totaled 217,462 pairs valued at $304,598, against 365,291 pairs valued at $494,854 in 1921, when they represented 81 per cent of the total Japanese rub-

Japanese Rubber Imports from the United States

	Rubber Goods	Insulated Wire and Cables	Crude Rubber		United States Reexports of Crude Rubber		Scrap Rubber		Reclaimed Rubber	
			Pounds	Value	Pounds	Value	Pounds	Value	Pounds	Value
1912*	$209,731	.....	158,176	$160,556	135,244	$151,113	1,911	$533	274,828	$47,589
1913*	258,191	.....	139,624	100,112	44,049	45,541	34,794	3,613	240,512	39,331
1914*	227,257	.....	11,914	8,166	6,181	4,400	40,491	1,534	72,427	12,440
1915*	144,098	.....	98,430	58,819	27,137	17,687	30,143	1,349	116,657	16,731
1916*	250,226	.....	92,248	67,415	.....	.....	121,068	14,981	84,719	10,659
1917*	364,405	.....	123,301	101,211	9,415	8,026	223,173	12,127	39,244	7,332
1918*	.....	.....	94,465	81,160	9,798	6,443	.....	.....	20,250	3,211
1918†	692,828	.....	173,368	151,629	.....	.....	.....	.....	35	10
1919†	1,542,829	.....	.....	.....	.....	.....	1,453,462	66,356	46,574	7,397
1920†	1,948,474	49,371	.....	.....	.....	.....	3,663,980	179,571	134,976	18,857
1921†	1,101,680	109,571	.....	.....	.....	.....	1,144,705	23,249	24,810	3,536
1922†	881,526	.....	.....	.....	.....	.....	.....	.....	.....	.....

Japanese Imports of United States Rubber Manufactures

	Belting, Packing, Hose Value	Rubber Boots		Rubber Shoes		Tires		Druggists' Sundries Value	Other Goods Value	Total Value
		Pairs	Value	Pairs	Value	Automobile Value	Others Value			
1912*	$74,721	44,130‡	$31,350‡	.....	.....	$13,531	$9,703	.....	$80,426	$209,731
1913*	77,900	13,055	23,790	46,717	29,977	29,975	12,185	.....	86,364	258,191
1914*	106,551	6,872	13,500	24,132	12,086	18,629	16,208	.....	60,283	227,257
1915*	38,520	752	1,227	20,623	11,032	12,741	3,558	.....	55,645	144,098
1916*	99,734	1,147	2,325	28,763	19,456	20,045	2,478	.....	106,188	250,226
1917*	158,358	985	3,120	38,388	26,215	34,243	3,230	.....	139,239	364,405
1918†	346,516	4,500	11,420	67,330	65,082	118,685	16,747	$4,819	129,559	692,828
1919†	301,792	28,517	56,022	393,679	390,663	422,432	5,108	16,779	276,280	1,542,829
1920†	462,251	22,523	59,088	400,880	453,353	491,246	28,499	14,302	241,387	1,948,474
1921†	89,127	107,512	235,655	257,779	259,199	191,477	3,660	7,837	287,940	1,101,680
1922†	107,242	74,784	181,584	142,678	123,014	161,906	1,958	12,357	293,465	881,526

Statistics of the United States Bureau of Foreign and Domestic Commerce.
*Fiscal year.
†Calendar year.
‡Boots and shoes.

Japanese Rubber Trade with the United States

Except for the year 1918, when the crude rubber trade between Japan and the United States first came into prominence, the United States rubber industry in its trade with Japan has had a balance very much in its favor, although not great, and this balance, stimulated by necessity and the fresh bonds of friendship recently cemented by heartfelt sympathy and prompt assistance in time of great need, gives promise of being at least well maintained, if not increased.

Japanese imports of United States rubber manufactures for the calendar year 1922 amounted to $881,526, or 36 per cent of our total Asiatic rubber goods exports, as compared with $258,191, or 80 per cent for the fiscal year 1913, not only representing a four-fold increase in our rubber trade with Japan but indicating the increasing use of rubber goods throughout the Far East.

The low mark in recent years was $144,098 in 1915, followed by

ber footwear imports. This was the peak of a steady advance from 21,375 pairs valued at $12,259 in 1915.

Rubber tire imports totaled $23,234 in 1912, reached their lowest level at $16,299 in 1915 and steadily increased to $519,745 in 1920, after which they declined to $163,864 in 1922. A comparison with total Japanese imports of rubber tires is impossible as the accompanying official Japanese figures are evidently incomplete.

Imports of belting, packing and hose, which amounted in 1922 to $107,242, represent a substantial advance over the 1912 total of $74,721 and the low figure of $38,520 in 1915, but a decline to less than one-fourth the 1920 business valued at $462,251. Undoubtedly this reflects both the business depression of 1921 and the increasing output of the home industry in mechanical lines.

Imports of miscellaneous other rubber goods valued at $293,465 in 1922 marked the peak of practically steady progress from the low figure of $55,645 in 1915, to which this general classification had declined from $80,426 in 1912.

INDIA RUBBER WORLD
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Vol. 69 JANUARY 1, 1924 No. 4

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Our Publicity Page

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Our last annual index included the names of over fifty prominent experts and executives of important companies who are readers of THE INDIA RUBBER WORLD and who swapped experiences through its pages for the advancement of the industry during the year 1923. Many other well-known men, whose names do not appear, also contributed through the pens of staff writers trained to interpret their ideas. Thus THE INDIA RUBBER WORLD is both of and for the industry. Every issue is in reality a round table conference at which many successful rubber trade executives participate, and present, describe, and discuss their aims, methods, and policies for mutual benefit.

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